

HER 15784
HER 15785
HER 402.

Northern Archaeological Associates

COWPEN BEWLEY TO WARDEN LAW GAS PIPELINE COUNTY DURHAM



archaeology@durham.gov.uk



Source Number... S23236 Event Number... 15784
Asset Number
Artefact Number Consultation.....

ARCHAEOLOGICAL EXCAVATION POST-EXCAVATION ASSESSMENT REPORT

for
TRANSCO

NAA 04/103
December 2004

Marwood House, Harmire Enterprise Park, Barnard Castle, Co. Durham DL12 8BN

COWPEN BEWLEY TO WARDEN LAW GAS PIPELINE

COUNTY DURHAM

POST-EXCAVATION ASSESSMENT REPORT

CONTENTS

Summary	1
1.0 Introduction	2
2.0 Location and geology	2
3.0 Archaeological background	3
4.0 Project background	7
5.0 Aims and objectives	8
6.0 Methodologies	9
7.0 Results	11
8.0 Assessment of the site archive	21
9.0 Significance of results	28
10.0 Recommendations for further results	30
11.0 Conclusions	32
References	35
Appendix A: Context and finds catalogues	37
Appendix B: Pottery	50
Appendix C: Flint	53
Appendix D: Metal working debris	58
Appendix E: Stone	59
Appendix F: Conservation	60
Appendix G: Environmental	61
Appendix H: Monitoring report	75
Appendix I: Updated project design	111

ILLUSTRATIONS

- Figure 1. Location of pipeline route and archaeological excavations
- Figure 2a-c. Field and site location plans including monitoring results
- Figure 3. Pig Hill, location of excavated features
- Figure 4a-c. Pig Hill, area plans and sections
- Figure 5. Pig Hill, phased plans
- Figure 6. Harehill Moor, location of excavated features
- Figure 7a-b. Harehill Moor, area plans and sections

PLATES

- Plate 1. Pig Hill, archaeological supervision of machine excavation
- Plate 2. Pig Hill, excavation of archaeological features by hand
- Plate 3. Pig Hill, possible sub-rectangular building 716
- Plate 4. Pig Hill, complex of inter-cut features on the crest of the ridge
- Plate 5. Pig Hill, ditch 793 facing south-east towards the crest of the ridge
- Plate 6. Harehill Moor, roundhouse gullies 2004 and 2006
- Plate 7. Harehill Moor, general shot of the roundhouse at the northern extremity of the site
- Plate 8. Harehill Moor, roundhouse gully 2012
- Plate 9. Harehill Moor, roundhouse at the southern extremity of the site

COWPEN BEWLEY TO WARDEN LAW GAS PIPELINE

COUNTY DURHAM

POST-EXCAVATION ASSESSMENT REPORT

Summary

This archaeological assessment report has been compiled by Northern Archaeological Associates for Transco and details the results of archaeological excavations at Pig Hill and Harehill Moor as well as monitoring of topsoil removal during the construction of a gas pipeline, which extended for some 30km, between Cowpen Bewley AGI (NZ 478250) and Warden Law AGI (NZ 362499). The report summarises the historical and archaeological background to the sites, describes the excavation methodology and summarises the results of the excavations. The specialist assessments of the artefacts recovered and samples taken are summarised and the significance of the excavated evidence is assessed. The potential of the site records and artefacts or samples for further analysis is stated and a programme of further detailed post-excavation analysis for publication of the excavation results is set out.

An archaeological evaluation undertaken near Pig Hill (NAA 2004) a Scheduled Monument (SM 34586) resulted in a full-scale excavation in order to record all archaeological features that lay within the pipeline corridor. The excavation identified a multiphase site comprising a series of linear boundary features and a number of roundhouse gullies of Iron Age date truncated by a series of medieval plough furrows. The area of excavation was dictated by the route of the pipeline and comprised a thin strip across an obviously more extensive settlement site. This made detailed phasing of the features extremely difficult. The paucity of well-dated Iron Age pottery assemblages within the region has hindered relative dating of features. However, provisional analysis of the excavation records and specialist assessment of the artefactual evidence has allowed five broad phases of activity to be recognised. Substantial evidence relating to metalworking and crop processing activities carried out on the site of Pig Hill has been recovered from the excavation. Analysis of charcoal samples from the site has demonstrated variation in the fuels being used.

During monitoring of topsoil removal another Iron Age site was identified at Harehill Moor. The site was located south-east of Haswell Plough and west of Haswell Moor, County Durham (NZ 378 415). The archaeological features exposed extended along the corridor for 85m and consisted of three possible roundhouses, a ditch, a number of pits, post and stake holes and a modern hedge line. All three roundhouses extended beyond the area of excavation and although two of them had multiple phases of construction, phasing between the roundhouses is not possible at this stage.

A series of eleven radiocarbon dates spread across the site of Pig Hill will refine the chronology of the site and enable changes in the settlement to be studied. Four radiocarbon dates are required to resolve the phases of occupation at Harehill Moor. Combining the dates with the artefactual data collected from Pig Hill may create a picture of how agricultural and metalworking practices changed throughout the occupation of the site. Combining the data thus achieved from Pig Hill with the evidence from Harehill Moor and the limited number of similar excavated sites within the region will vastly extend the corpus of information currently available for the Iron Age within County Durham and the north-east region.

1.0 INTRODUCTION

- 1.1 This document presents the results of a programme of monitoring and excavation undertaken along the route of the Cowpen Bewley to Warden Law gas pipeline (Figure 1). The results of the programme of evaluation and topographic survey are presented as a separate report (NAA 2004).
- 1.2 The work was undertaken by Northern Archaeological Associates (NAA) between March and August 2003 on behalf of Transco, Mouchel Consulting and Entrepose Industrial services. The project was based upon the results of an earlier desk based assessment (Bonnor 2002), archaeological fieldwalking and field reconnaissance (Groundwork Archaeology 2003) and project specifications (Terra Firma 2003a, 2003b).
- 1.3 The evaluation carried out at Pig Hill (NAA 2004) identified a large multiphase Iron Age settlement which was subsequently examined by the total excavation of all archaeological features within the pipeline corridor.
- 1.4 The potential for unrecorded sites along the pipeline route was considered to be high and an archaeological watching brief during topsoil stripping of the full length of the corridor was undertaken, during which an Iron Age settlement site at Harehill Moor was discovered.
- 1.5 In accordance with current English Heritage guidelines (English Heritage 1991), this report presents the results of the excavation of the two Iron Age settlement sites, the results of archaeological monitoring of topsoil removal and post-excavation assessments of the resulting archives.

2.0 LOCATION AND GEOLOGY

- 2.1 The pipeline corridor (Figure 1) followed a circuitous route from Cowpen Bewley (NZ 478 250) in the Borough of Hartlepool to Warden Law (NZ 362 499), in the Borough of Sunderland. The route was approximately 30km in length and traversed a mixed agricultural landscape. The topography of the pipeline route changed gradually from the flat landscape of the River Tees floodplain at Cowpen Bewley to the undulating landscape of East Durham as it continued northwards towards Warden Law.
- 2.2 The bedrock morphology of the route traversed by the pipeline comprised Triassic and Permian mudstones and sandstones around the Tees estuary giving way to Magnesian limestone for the majority of the route north of this (IGS 1979). The drift geology was composed of raised beach, lacustrine and alluvial deposits in the south and boulder clay with occasional deposits of glacial sands and gravels at the northern end of the route. (IGS 1977). The soils encountered on the route belong to the pelo-alluvial soils of the Wallasea 2 Association, the slowly permeable clayey stone-less soils of the Foggathorpe 2 Association and the stagnogley soils of the Dunkeswick Association, the latter predominating north of the Tees estuary (SSEW 1983 and Jarvis *et al.* 1984).

3.0 ARCHAEOLOGICAL BACKGROUND

3.1 The archaeological excavations comprised part of a staged approach to the mitigation of known or suspected archaeological remains within the area of the proposed development. An assessment study (Bonnor 2002) was carried out on a 30km long, 1km wide study corridor, centred on the proposed pipe trench. Important sites outside but close to this corridor were also recorded in order to illuminate the broader archaeological landscape. A summary of the relevant results is set out below.

Early prehistoric

3.2 The only surviving confirmed evidence from the Palaeolithic era for County Durham is a single flint found at Warren House Gill on the present day coast (Pocock and Norris 1990, 14). No verifiable Mesolithic remains are recorded within the study corridor. Possible Mesolithic microliths have been collected in the vicinity of Warden Law at the beginning of the last century but no detailed records exist.

Neolithic and Bronze Age

3.3 Two important Neolithic barrow monuments lie close to the northern end of the pipeline route. These are the Scheduled Monument 'Seven Sisters' round barrow (SM 32055) at Copt Hill, Houghton Le Spring, and the Warden Law South Barrow approximately 850m east-north-east of Warden Law (TWSMR 255). The latter barrow could be Bronze Age in date. No firmly dated Neolithic artefacts are recorded within the study corridor, however, a single Neolithic or Bronze Age stone axe fragment (TWSMR 251) is listed to the south-east of Great Eppleton village. A number of unspecified flints have been collected over the Warden Law area (TWSMR 257) and a number of flakes, together with a scraper or spearhead were recovered to the north-west of the water tanks at Great Eppleton (TWSMR 250). Undated flint artefacts retrieved during structured fieldwalking in the vicinity of Stotfold Moor and High Stotfold could date to either the Neolithic or the Bronze Age (TSMR 1671, 1676, 1677, 1680, 1681, 1699, 3835), as could flints collected in the Claxton Grange area (TSMR 1663, 1664, 1665).

3.4 The remains of Bronze Age domestic settlements are generally scarce. The surviving evidence suggests that a typical Bronze Age farming settlement may have consisted of a number of 'roundhouse' dwellings, with associated outbuildings and surrounding arable or pastoral field-systems. Excavation of the substantial house and enclosure at Bracken Rigg revealed a mixed economy and permanent occupation (Pocock and Norris 1990, 16).

3.5 A Bronze Age hilltop enclosure (SM 34586) is located within the study corridor at Pig Hill, to the north of High Haswell. In view of their importance in understanding the transition between the Bronze Age and Iron Age, all examples of this category of monument with surviving archaeological remains are considered to be of national importance.

3.6 The Seven Sisters barrow, with its Neolithic primary burial, also contains at least eight secondary Bronze Age cremations and inhumations. Three other barrows are recorded between Murton and South Hetton, approximately half a kilometre to the east of the study corridor (DSMR 541, 551 and 1154). Warden Law North Barrow (TWSMR 447) was excavated in 1979 and comprised a cist containing a cremated child covered by an earthen mound. Another Bronze Age burial cairn, Fairies Cradle,

located to the east of Hetton-le-Hole (TWSMR 249), was excavated in the nineteenth century. A single Bronze Age scraper (TSMR 1581) and a possible late Bronze Age/early Iron Age whetstone (TSMR 3439) were recovered during fieldwalking to the west of the study area, east of High Burntoft farm. A possible late Bronze Age/early Iron Age quern was also recovered near High Burntoft (TSMR 3440).

Iron Age and Romano-British

- 3.7 One sherd of early Iron Age pottery, three unspecified Iron Age sherds and several Romano-British sherds (TSMR 1753 and TSMR 1749) were recovered during fieldwalking between Claxton House Farm and Low Burntoft Farm. Two undated rectilinear enclosures are recorded c. 500m to the south-west of High Burntoft farm (TSMR 1097).
- 3.8 Evidence of Romano-British activity within the study corridor includes a single coin found adjacent to the Cowpen Bewley A.G.I (TSMR 1458), four sherds of pottery found adjacent to the medieval moated site at Claxton (TSMR 1750) and several sherds of pottery found during fieldwalking surveys (TSMR 1749, 1753, 1755 and 1758). All are located within the southernmost third of the route. A site approximately 1km to the south-west of the study corridor, near Newton Bewley (NZ 4555 2670), provides the nearest substantial evidence for occupation of the area at this time. Excavations in 1998 showed some evidence for occupation of the site from the Iron Age to the Roman period. Late Roman material was particularly well represented and the site stratigraphy suggested a phase of intense occupation lasting into the fifth century (Platell 1999, 1). Cropmarks noted on aerial photographs taken to the north-west of Newton Bewley have been provisionally interpreted as showing Romano-British settlement with overlying Anglian occupation (Platell 1998, 1).

Anglo-Scandinavian

- 3.9 The invasion of the north-east by Angles or Anglo-Saxons from the northern coast of Germany or Denmark was consolidated by Aedelfrith (AD 536–617) through battlefield victories and marriage into the royal house of Deira. The united houses formed an extensive kingdom between the Humber and Forth, which for a century was the country's largest and most powerful unit. Associated with this political stability was a christianising of the area and the spread of monasticism (Pocock and Norris 1990, 22). In return for lobbying for the elevation of Guthred to the throne in York in AD 883, the bishop and his successors were given right of sanctuary and customs in all lands north of the Tees. In this way the palatinate authority of the bishopric was born (Pocock and Norris 1990, 24).
- 3.10 Beyond the monastic world, an organisation for the whole area began to take shape. The initial divisions were extensive and were served by one church or 'minster' (Pocock and Norris 1990, 23). One early possible site was Billingham at the southern end of the pipeline route. The outlines of many modern parishes were established in this period. In some cases these follow pre-Christian land division boundaries. The sites of many parish churches also date from this period.
- 3.11 Isolated early medieval sites are rare, occupation often continued into the medieval period and beyond, with later ground disturbance erasing much of the evidence for the earlier occupation. Most present day villages have their origins in this period and modern patterns of land division largely date from this time.

- 3.12 Aerial photographs to the north-west of Newton Bewley have been provisionally interpreted as a Romano-British settlement with overlying Anglian occupation (Platell 1998, 1). No further evidence for isolated sites of this period exists within the vicinity of the study corridor.

Medieval

- 3.13 In general, as with the rest of England, County Durham experienced a period of expansion and relative prosperity during the 12th and 13th centuries. The stability of the county and its local communities had prospered as the threat of incursions from the north faded. The establishment of a great monastic house at Durham and the power of the bishop throughout the county set the whole area apart, separate even from central government (Pocock and Norris 1990, 31). The line of 'Salter's Way' (TWSMR 1602), the salt trading route linking the Bishop's salt pans on the Wear with the Vale of York, runs to the east and roughly parallel with the pipeline route from Warden Law to Wingate. No indication of its course past this point survive.
- 3.14 A deserted medieval village (DMV) is recorded within the study corridor (MON 27167 / DSMR 159) somewhere in the region of Black Hurworth Farm, Catley Hill, on the western edge of the corridor. Recorded shrunken medieval villages (SMVs) include Cowpen Bewley, High Haswell, Great Eppleton and Warden Law (TSMR 604, TWSMR 259, TWSMR 260). The site of the former chapel at High Haswell is a Scheduled Monument (SM 34584). A scheduled medieval farmstead is recorded approximately 500m to the south-west of the study corridor at High Burntoft (SM 28535).
- 3.15 Further possible settlement remains have been identified from aerial photographs to the north of a probable road bank earthwork east of High Stotfold Farm, itself a possible medieval farmstead (TSMR 0642). Four substantial scatters of medieval pottery recorded approximately 500m to the south-west of Stotfold farm certainly indicate a high level of activity in this area (TSMR 1768, 1769, 1770, 1771). A possible hollow way was also visible to the east of Wingate Grange farm.
- 3.16 A possible 16th century Grange of Durham priory is recorded within the vicinity of the former spoil heaps of Wingate Colliery (DSMR 1089), though its precise location is not known. Substantial remains of a medieval moated site at Claxton (SM 12601) are associated with a chapel, extant until at least AD 1430 (TSMR 646).
- 3.17 Ridge and furrow ploughing was characteristic of medieval arable farming, and often survives as a major feature in the landscape. Elsewhere it can be identified from early aerial photographs where modern ploughing has destroyed any upstanding earthworks. However, land often continued to be farmed in this way until the 18th or early 19th centuries. The ridge and furrow recorded during the assessment could therefore belong either to the medieval or the post-medieval periods. Numerous fields of ridge and furrow have been identified within the study corridor. Unfortunately the majority of the earthworks visible on aerial photographs in the 1940s are likely to have been ploughed out in subsequent years.

Post-medieval

- 3.18 For the area covered by this report the most significant factor affecting the development of the countryside was the modernisation and expansion of the coal mining industry. Prior to the 19th century the transport of coal from the northern

coalfields had been reliant on colliery wagon-ways. Horse-drawn wagons called 'chaldrons', running on wooden planks or wagon-ways, first appeared in the mid-17th century. These gradually developed into a complex network of metal-railed routes. In the early years of the 19th century the industry became increasingly mechanised. In 1805 the first stationary haulage engine was constructed to raise coals from the valley at Birtley, near Gateshead, to the heights of Black Fell whence the wagons ran down to the Tyne. So began a series of new rail routes, with engines sited on hilltops and further expansion of the coalfield became practicable (Atkinson 1974, 29).

- 3.19 The scale of railway expansion is evident by the number of disused railways within the study corridor. These include sections of the 1825 Hetton Railway, the 1831 Rainton and Seaham Railway, the 1839 North Eastern Railway (NER) Durham and Sunderland Branch (South), the Haswell Wagon way, the NER Ludworth Branch, the NER Thornley Branch, the NER Sunderland and Hartlepool Line, the Green Hills Railway, the NER Ferryhill and Hartlepool Line and the NER Stockton and Castle Eden Branch.
- 3.20 The last working steam haulage-engine, sited at Warden Law (TWSMR 2977), went out of use in 1960. This engine, built in 1836, had replaced one built by Stephenson in 1823. The Warden Law engine was removed in 1963 to make way for quarrying. Several further engine sites are located within the study corridor including the Byer Engine (TWSMR 3187) – later to become the Copt Hill Engine (TWSMR 2979), the Flat Engine (TWSMR 2973) and Eppleton Engine (TWSMR 2993).
- 3.21 The sites of five coalmines are shown on the 1st and 2nd edition Ordnance Survey maps within the vicinity of the study corridor. These include: Eppleton Colliery commenced in 1824 (TWSMR 2982), Haswell Colliery in 1835, Wheatley Hill Colliery in 1869, Wingate Colliery in 1843 and South Wingate (Rodridge) Colliery in 1841.
- 3.22 To a lesser extent, quarrying also left its mark on the landscape of the region. Gravel pits are recorded on 1st and 2nd edition Ordnance Survey maps. These include two pits at Hetton-le-Hole (TWSMR 2995 and 2997), one at Sheraton West Grange and two between Low Stotfold and Low Burntoft Farms. A sand pit is recorded at Great Eppleton (TWSMR 2775). Unspecified quarries are also located at Warden Law (TWSMR 2971), west of Wingate, Beacon Hill and South Hetton. A former limestone quarry is also shown south of Haswell Plough. Many of these features are recorded as 'old' or 'disused' on the first edition Ordnance Survey maps of 1856.
- 3.23 Evidence of a former brick-making industry is also apparent. This was once a large regional industry and several references can be found on historic Ordnance Survey maps. Brick ponds are recorded at Great Eppleton (TWSMR 2981) and Easington Lane (TWSMR 2996) although the former, and probably the latter, were out of use by 1856. Former brickworks and clay pits are noted at Wingate and a brickearth pit is recorded to the north of Cowpen Bewley (TSMR 4091). Clay pits at Wheatley Hill may have produced the raw materials for the nearby colliery housing.
- 3.24 Four windmill sites are located just beyond the limits of the study corridor, at Warden Law (TWSMR 2972), Elwick (TSMR 0876 and 4501) and Cowpen Bewley (TSMR 0622). These are all likely to have been for corn milling.

- 3.25 In addition to demolished colliery buildings and housing, a number of more isolated buildings are shown on tithe and Ordnance Survey maps which are no longer present; these are all small and mostly shown without any name or description, suggesting that they are agricultural buildings such as barns or sheds. Examples include a building near Low Stotfold shown on the second edition Ordnance Survey map and one near Cotsfold Close Farm shown on the Elwick tithe map.
- 3.26 The archaeological potential of Second World War sites has recently been recognised. Understandably military installations from the period are often poorly documented and archaeological evidence can make a considerable contribution to the interpretation of these sites. A World War Two bombing decoy site, designed to replicate the railway yard and factory lighting of the ICI chemical works at Billingham, is situated to the north of the present day A1185 (TSMR 4368).

4.0 PROJECT BACKGROUND

- 4.1 The Cowpen Bewley to Warden Law pipeline comprises a c.30 km long, high-pressure gas pipeline constructed between the Cowpen Bewley AGI (NZ 47800 25000) and the Warden Law AGI (NZ 36200 49900) and was intended to reinforce Transco's National Transmission System. The pipeline passed through five unitary authorities, Sunderland, Durham, Easington, Hartlepool and Stockton on Tees (Figure 1).
- 4.2 A staged approach was adopted for the archaeological investigation of the pipeline route. This included a feasibility study, desk-based assessment, fieldwalking and geophysical survey. The results of this work were then used to develop a mitigation strategy for the construction of the pipeline.
- 4.3 A total of nine sites were identified for pre-construction evaluation by trial trenching or topographic recording due to their archaeological potential (Figure 2a-c). When trial excavations revealed significant archaeological remains a provision was made to extend the excavation to ensure detailed recording of all archaeological features encountered.
- 4.4 Geophysical surveys were carried out by Pre-Construct Geophysics for Groundwork Archaeology Ltd at Wood View Farm, High Crow House, High Haswell House, Pig Hill, Bracken Hill and Great Eppleton (sites 2,5,6,7,8 and 9) to identify any features of archaeological significance within the pipeline corridor. At Pig Hill (site 7) the pipeline was re-routed and a second geophysical survey was carried out. Unfortunately the results of the surveys were mainly inconclusive, showing ridge and furrow or metal pipe type anomalies.
- 4.5 The potential for unrecorded sites along the pipeline route was considered to be high and an archaeological watching brief during topsoil stripping of the full length of the corridor was undertaken during which an Iron Age settlement site at Harehill Moor was discovered.

5.0 AIMS AND OBJECTIVES

5.1 The overall aims of the project were

- to identify and characterise any archaeological remains that existed within the pipeline corridor
- to assess their significance
- to propose and implement mitigation strategies in order to preserve *in situ*, or by record, any such features that would otherwise be compromised or destroyed during construction works

5.2 The overall objectives relevant to this report were

- to elucidate the nature and degree of survival a number of possible archaeological sites identified in previous archaeological studies in order to assist in the formulation of further mitigation strategies to effect the preservation of those sites
- to identify and mitigate the loss of hitherto unknown and unsuspected archaeological sites by a programme of archaeological monitoring during topsoil stripping

5.3 The main objective of the excavation at Pig Hill was to preserve the site by record and carry out analysis to fulfil the following research aims (Terra Firma 2003b)

- assess the relationship between the excavated features and the Scheduled Monument on Pig Hill by further research to discern patterns within the wider landscape
- investigate the duration of occupation, any periods of abandonment and specifically any activity that relates to the transitional periods between the Bronze Age/early Iron Age and later Iron Age/Romano-British
- achieve accurate and firm chronological development using pottery assemblages and radiocarbon dating of selected deposits in order to contribute to regional pottery sequences and to gain an understanding of the site development and types of agricultural, economic and social processes at work on the site

5.4 The specific objective of the excavation at Harehill Moor was

- to excavate an appropriate sample of the exposed remains in order to gather sufficient information to establish their extent, condition, character, quality and date

6.0 METHODOLOGIES

6.1 Construction sections and plot numbers

- 6.1.1 The initial archaeological assessment of the proposed pipeline route allocated identifying numbers to each field crossed by using a combination of construction section and field number within each section. There were seventeen construction sections, delimited by road crossings. The sections were numbered sequentially (0 to 16) from the Cowpen Bewley AGI to the Warden Law AGI. Each field crossed by the pipeline was located within a construction section and was also allocated a unique consecutive plot number by Transco. This system was adopted as the field identification system in all archaeological evaluation, excavation and monitoring works.
- 6.1.2 Prior to the introduction of this system, Groundwork Archaeology had allocated each field crossed by the pipeline a consecutive field number, with the numbering beginning at 1 at the start of each construction section.

6.2 Archaeological monitoring

- 6.2.1 Topsoil within the fenced pipeline easement was stripped using a variety of methods. The fenced easement was generally 20m, with the stripped area running along the western side usually about 15m wide, the remaining eastern side of the easement being used for topsoil storage. In most areas, topsoil from a strip between 5m and 8m wide along the western side of the easement was cleared by 360° tracked excavator using either a straight-edged ditching bucket or a large blade. This produced a corridor wide enough to allow access to bulldozers which then pushed the topsoil from the remaining part of the easement directly onto the topsoil bund. In areas below overhead power-lines only the edges of the easement were cut by tracked excavator, with the whole of the remainder cleared by bulldozer.
- 6.2.2 A record was made of the topography, soil and subsoil within each field, together with a written description of any archaeological features or deposits identified. A single *pro-forma* record sheet was filled out for each field, following the field numbering system used within the Archaeological Fieldwalking and Field Reconnaissance Survey (Groundwork Archaeology Ltd 2003). The locations of any archaeological remains (principally ridge and furrow) were marked onto a set of 1:5000 strip-maps of the route, supplied by the construction contractor, which will form part of the archaeological archive. Photographs in 35mm format were taken of archaeological features and to record relevant topographical features and working methodologies.
- 6.2.3 The stripped subsoil surface and topsoil bund were inspected for artefacts as thoroughly as the programme of topsoil stripping permitted. Where monitoring identified a site of archaeological potential, the works were expanded to full-scale excavation, after consultation with the relevant county archaeologist and Transco. One site identified by the archaeological monitoring, Harehill Moor, was subject to such a response.

6.3 Archaeological excavation of sites Pig Hill and Harehill Moor

- 6.3.1 Excavation was undertaken in accordance with site specific method statements (NAA 2003a, Terra Firma Consulting 2003b) as part of the evaluation process. These Written Schemes of Investigation were formulated in consultation with Transco, Mouchel Consulting, Terra Firma Consulting, and the relevant county planning archaeologist. The location and dimensions of excavation were designed to evaluate specific areas of archaeological potential identified in the evaluation stage, in the case of Pig Hill, and the monitoring stage in the case of Harehill Moor. The total area excavated at Pig Hill amounted to some 1800m², the archaeology exposed at Harehill Moor during topsoil removal covered an area some 960m².
- 6.3.2 The location of each excavation and a local grid system was surveyed using a Leica TC500 total station Theodolite linked to a Fujitsu Stylistic 1200 pen computer using PenMap software. This information was transferred to AutoCAD 2000iLT software and reproduced for incorporation within this report. The local grid systems of each site were later related to the national Ordnance Survey grid.
- 6.3.3 At Pig Hill, excavation was undertaken with a 360° tracked excavator equipped with a 2m wide toothless ditching bucket operated under direct archaeological supervision (Plate 1). Topsoil and subsoils were excavated as separate events and the arisings from both stored separately. Mechanical excavation continued to a depth at which archaeological features were visible to the full width of the machined area of the pipeline corridor some 12m wide. The length of the excavation along the corridor was determined by the supervising archaeologist to expose the full extent of the archaeological site uncovered in the evaluation.
- 6.3.4 Archaeological features discovered were cleaned by hand and photographed in 35mm format using colour slides and black and white prints prior excavation. A site plan of features and deposits was recorded, sections and small finds were located using a Leica TC500 Total Station Theodolite.
- 6.3.5 Archaeological features exposed were excavated (Plate 2) to a percentage decided with consultation with the relevant county archaeologist. At Pig Hill this amounted to 100% of discrete features such as pits or postholes, 50% of domestic and settlement related features and 25% of linear features such as ditches and gullies. The remaining 50% of the domestic and settlement-related features and a further 25% of linear features were quickly excavated by hand in order to increase the amount of artefacts recovered. At Harehill Moor a lower percentage of 100% of discrete features, 50% of domestic and settlement-related features and 25% of linear features was agreed.
- 6.3.6 A full written record of deposits was made using the NAA recording system. Sections were drawn at a scale of 1:10 and levels were tied in to Ordnance Datum. A photographic record of the site was taken in 35mm format using colour slides and black and white prints. Finds recovered during the evaluations were cleaned and sent to the relevant specialists for study. Palaeoenvironmental soil samples were taken of relevant deposits which were sent to the relevant specialists for study.

7.0 RESULTS

7.1 Archaeological monitoring

- 7.1.1 The watching brief recorded a relatively small number of archaeological features. The only significant site identified as a result of the watching brief was the Iron Age settlement site at Harehill Moor (Figure 2c, Field 8/10). The majority of other features identified consisted of patterns of ridge and furrow of probable medieval date (Figure 2a-c).
- 7.1.2 During the watching brief, ridge and furrow known from aerial photographs (APs) or surviving as upstanding earthworks was confirmed within the stripped corridor in nine fields: 1/3 (APs), 3/3 (APs), 3/6 (earthworks), 3/7 (earthworks), 3/8 (earthworks), 5/13 (earthworks), 8/7 (APs), 8/8 (APs) and 8/9 (APs).
- 7.1.3 Within field 4/11, furrow bases from former ridge and furrow were recorded during the watching brief cutting into the subsoil on a different alignment to overlying earthwork ridge and furrow, showing that two different phases of this type of cultivation had occurred.
- 7.1.4 The watching brief identified previously unrecorded ridge and furrow within 37 fields, surviving as furrows cutting into the subsoil. These fields were 1/4, 1/5, 1/6, 1/7, 1/8, 1/9, 2/1, 2/2, 2/3, 2/4, 2/10, 3/1, 3/12, 3/13, 4/1, 4/2, 5/1, 5/2, 5/7, 5/8, 5/9, 5/10, 5/14, 5/15 (including a headland), 6/1, 6/9, 8/3, 8/4, 8/5, 8/6, 8/12, 9/3, 11/2, 11/7, 12/1, 15/2 and 16/9 (together with a hollow way, headland, a former field boundary and ditches).
- 7.1.5 An overgrown former drove-way or green lane was identified running between fields 5/2 and 5/3
- 7.1.6 Minimal recording of several former railway lines was possible, although in general this did not provide any useful information. These included the former Stockton and Castle Eden branch line between fields 5/13 and 5/14, the former North Eastern Railway, Thornley branch between fields 8/1 and 8/2 and the former North Eastern Railway, Durham and Sunderland branch in field 16/3. The routes of the former North Eastern Railway, (Ferry Hill and Hartlepool Branch) between fields 6/7 and 6/8 and the former Rainton and Seaham Railway at the northern side of field 16/10 were both crossed by directional drilling, preventing recording.
- 7.1.7 Despite the extensive former coal mining within areas crossed by the pipeline route, little new information on this industry was recorded during the watching brief. A colliery waste tip not identified by the desk-based assessment was recorded in field 6/13. An expected colliery waste tip in fields 7/3 and 8/1 was not identified and probably lay to the east of the pipeline route. Part of a colliery railway embankment was recorded in field 9/1. No evidence was seen for a former colliery building known from cartographic sources to have been crossed by the route within field 9/3. This was probably as a result of tipping of colliery waste, which had also obscured any evidence of former wagon-ways or railway lines in field 9/4. To the north, this tip also obscured any remains of two rows of cottages which formerly stood in field 10/1.

7.1.8 A substantial dump of Second World War munitions was identified within field 8/9 on Harehill Moor. An Iron Age settlement site identified in field 8/10 on Harehill Moor during the watching brief was subsequently excavated and is described elsewhere in this report. No evidence for the crop-mark enclosure site (Site 8) in field 16/4 was identified.

7.2 Excavations at site 7, Pig Hill

Introduction

7.2.1 The site was located 450m to the south-west of High Fallowfield Farm (Figure 2c) and 1km south-west of the village of South Hetton in County Durham (NZ 371443). A Scheduled Monument (SM 34586) is located on Pig Hill, some 150m to the west of the site. The monument comprises cropmarks delineating a double ditched or palisaded, polygonal enclosure on the southern slope and top of Pig Hill. Cropmarks within the enclosure are believed to represent traces of settlement. Little dating evidence exists with regard to the site which is believed to be at least in part of Bronze Age date.

7.2.2 The Scheduled Monument on Pig Hill occupies the highest ground in the local vicinity with a ridge of high ground extending from the hill across the fields to the east. The excavated site lay on this ridge extending down the gradually sloping ground to both north and south. A small watercourse, the Caldwell Burn, lies on the northern side of the Pig Hill Scheduled Monument curving gradually round to the south-east. The field containing the excavation site falls quite steeply down towards the burn at its northern end.

7.2.3 Fieldwalking of the pipeline route adjacent to the Scheduled Monument produced a fragment of daub or a sherd of prehistoric pottery from a position some 50m to the south-east of the monument. A geophysical survey conducted along the route revealed a linear anomaly believed to represent an enclosure ditch. Three high magnetic anomalies were identified to the south of the ditch and interpreted as possible kiln structures. A series of anomalies to the north of the ditch represented iron spikes and four individual high positive anomalies, detected in the south-east of the area, were believed to represent pit-like features. This group of features were considered as possibly representative of activity associated with the Scheduled Monument.

7.2.4 The site was traced for 135m within the pipeline corridor and spanned the full width of the machined area, at c. 12m wide, some 1,800m² in area (Figure 3). It extended 35m to the south of the crest of the ridge and 100m down slope to the north. In both directions the gradient of the slope was gradual. The field was in crop at the time of the excavation between April and June 2003. The archaeological features encountered had been truncated by later agricultural activity and no contemporary ground surfaces survived.

7.2.5 The excavation identified a multiphase site comprising a series of linear boundary features and a number of roundhouse gullies of Iron Age date truncated by a series of furrows of probable medieval date (Figure 4a-c). The area of excavation was dictated by the route of the pipeline and comprised a thin ribbon across an obviously more extensive settlement site. This made detailed phasing of the features extremely difficult as many of the enclosure ditches extended out of the area of excavation. The paucity of well-dated Iron Age pottery in the region has hindered relative dating of

features. However, provisional analysis of the excavation records and specialist assessment of the artefactual evidence has allowed five broad phases of activity to be recognised (Figure 5). This analysis included grouping features on similar alignments and perpendicular features into the same phase, a technique that was successfully used at Sigwells Farm in Somerset (Tabor and Johnson 2000). Ring gullies representing possible round houses and their associated pits were placed within the phase that included boundary ditches forming enclosures around them. All such grouping is tentative at this stage, but further artefactual analysis and radiocarbon dating will enable this process to be refined.

- | | |
|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Phase 1 | A sequence of early features on the crest of the hill |
| Phase 2 | Boundary ditches demarcating enclosures containing at least one roundhouse aligned roughly north-north-east to south-south-west and west-north-west to east-south-east |
| Phase 3 | A series of boundary ditches aligned north-west to south-east and roughly north-east to south-west |
| Phase 4 | Iron Age features stratigraphically later than Phase 3 |
| Phase 5 | Medieval ridge and furrow cultivation (not illustrated) |

Phase 1 (Figs. 4a-b)

- 7.2.6 A curving gully (838) located on the easternmost edge of excavation was re-cut along the same alignment by a similar gully (824). It formed a curve, not unlike a ring gully and may relate to an early phase of occupation. The latter gully measuring some 0.3m wide and 0.2m deep completely cut away the earlier gully (838) except for its southern end which extended beyond the limit of excavation. Two gullies/slots (842 and 777) 0.4m to 0.3m wide and 0.12m to 0.18m deep, on an approximate east to west alignment cut the curving gullies (838, 824). Gully 842 was almost entirely cut away by 777 which also cut a small pit or posthole (848) located near to the western edge of excavation. A single sherd of Iron Age pottery was recovered from within the fill of 848. These two gullies (842 and 777) almost certainly represented a boundary feature that had been replaced.
- 7.2.7 A ditch (762) extended from the crest of the ridge southwards for 8m cutting the fill of ditch 777 before terminating 0.5m further to the south. The feature, which was 0.62m wide and 0.15m deep was cut by ditch 803.
- 7.2.8 A gully (781) that measured 0.75m wide and 0.23m deep, extended into the site in a south-westerly direction from the eastern limit of excavation for a distance of 3m. A short gully (950) measuring 0.5m wide and 0.25m deep, roughly on a north to south alignment, lay only 0.5m to the west of this feature. An oval pit (783) measuring 2.2m by 0.9m by 0.33m deep, that contained a re-cut, lay 3.5m to the north of the terminal of ditch 762. The re-cut 963 measured 2m by 0.8m and was 0.33m deep. A posthole (954) that cut the fill of 783 measured 0.27m in diameter and 0.22m deep. Pit 783 cut the gullies 781 and 950 and was in turn cut by the structure 716.
- 7.2.9 A gully or slot (854), 0.3m wide and 0.18m deep, extended into the site from the western limit of excavation for 2m ending in a rounded terminal. The fill of this

feature contained a concentration of charred grain and chaff. Two narrow structural style slots – 716 (section A and B, Figure 4a and Plate 3) and 928 – formed an unusual sub-rectangular structure which cut gullies 854, 950 and pit 783. The structural slots varied between 0.36m and 0.55m wide and 0.1m and 0.22m deep and may have represented a fenced enclosure or a crude building. Three pieces of hammerscale, a few charred cereal grains and fragments of chaff, and a single sherd of Iron Age pottery were found within the fill of 716. A gap in the feature at its south-east corner represented an entrance, c. 3.5m wide. Two possible postholes (1040 and 988) were excavated within the sub-rectangular structure. Feature 1040 was 0.25m across and 0.14m deep and feature 988 measured 0.77m wide and 0.16m deep, the second of the two large enough to represent a pit rather than a posthole. The fill 988 contained fragments of hearth bottom, iron smithing slag and the largest concentration of prill on the site. The fill of posthole 1040 contained a fragment of hammerscale and a large concentration of prill. An S-shaped slot (803), of similar form and character, 0.45m wide and 0.2m deep, extended across the south end of the structure cutting ditch 762. A small concentration of fuel ash, hammerscale and a number of charred grains and chaff fragments were found within the fill of 803. This evidence suggests that there was a concentration of domestic and possibly some metalworking activity in this area during Phase 1 which could be linked to the sub-rectangular structure. However further stratigraphic analysis combined with radiocarbon dating will be needed to prove any such relationship.

- 7.2.10 An isolated pit (1152) lay close to the western limit of excavation (Figure 4b), where it was cut by the Phase 2 enclosure ditch 747. The pit measured 0.6m in diameter and 0.18m deep. The feature is believed to be of Phase 1 date from its stratigraphic relationship but is otherwise an isolated feature.

Phase 2 (Figs. 4a-b, 5)

- 7.2.11 A series of inter-cutting slots were identified on the crest of the ridge (Plate 4). The earliest of these features was a curving slot or gully (816), 0.4m wide and 0.17m deep (section B, Figure 4a), which ran across the site for 8m from the eastern limit of excavation to its terminal in the central part of the site. Another gully (772 same as 814) measuring 0.5m wide and 0.28m deep (section B and C, Figure 4a) extended across the full width of the site on an east to west alignment. A large concentration of fired earth, a few pieces of hammerscale and a two sherds of Iron Age pottery were found within the fill of 772. This feature was of similar form and size to a further slot (788), which was 0.32m wide and 0.18m deep and located to its north. A single sherd of Iron Age pottery was found within the fill of 788 and this feature curved slightly as it crossed the site on a general east to west alignment. The west end of 788 lay 4.5m north of slot 772 and the east end of the feature only 1.5m to the north. The two slots could have been contemporary and may represent a feature intended to funnel livestock into an enclosure. Feature 772 was cut by a further slot, 957, which was 0.34m wide and 0.14m deep (section C, Figure 4a), traced for 2.7m on a south-west to north-east alignment. The function of the feature was unclear, but the fill of 957 contained a single sherd of Iron Age pottery.
- 7.2.12 To the south of these boundary ditches two possible enclosures were recorded. They were formed by contemporary ditches (823, 764, 766, 1050 and 1034) which enclosed two separate areas. The eastern enclosure measured some 28m north-north-east to south-south-west and more than 12m wide, extending beyond the limit of excavation to the east. The western enclosure was only partly within the area of excavation but

measured at least 16m north-north-east to south-south-west and more than 6m wide. The ditches varied in width between 1.2m and 0.4m wide and 0.32m and 0.18m deep (section D, Figure 4a) and two sherds of Iron Age pottery were found within the fill of ditch 823. They were similar in scale and character and are likely to have formed an enclosure sequence. The part of the enclosure formed by ditch 1050 was replaced at a later date by what seemed to be a fence line slot (1053). Ditch 1034 seemed to be on a slightly different alignment, more akin to the Phase 4 ditches. The point of intersection between 1034 and 1050/1053 lay outside the area of excavation therefore the assignation of ditch 1034 to this phase is tentative.

- 7.2.13 Four and a half metres to the east of ditch 766 a substantial part of a roundhouse gully (965), 0.35m wide and 0.22m deep, was traced adjacent to the eastern limit of excavation (section E, Figure 4a). Less than half of the gully was exposed within the excavated area and it represented a structure more than 7m in diameter. No direct relationship could be established between the gully and the enclosure sequence but it is entirely likely that the roundhouse was contained within the enclosure mentioned above. Three pits (962, 990 and 1039) were also recorded in the same area and these also could have been associated with the enclosure, though again there was no direct stratigraphic evidence. Pit 962 measured 0.59m by 0.8m by 80mm deep, pit 990 measured 0.85m by 0.6m by 0.13m deep and pit 1039 measured 0.7m by 0.65m by 0.3m deep. All of these features contained charred grain and chaff, whilst the ring gully 965 and pits 962 and 1039 contained small amounts of iron smithing waste, supporting a domestic interpretation for these features.
- 7.2.14 A gap of 10m lay to the north between the concentration of features located on and to the south of the ridge before further features were encountered (Figure 4b). These comprised a curving slot or gully (829), 0.23m wide and 0.07m deep, and two isolated postholes (975 and 977), 0.3m wide and 0.13m deep and 0.27m wide and 0.07m deep respectively. The fill of the curving slot contained hammerscale, fuel ash, and smithing slag as well as charred grain and chaff fragments. Posthole 975 contained hammerscale and charred cereal grains within its fill. These features were included in this phase (very tentatively) due to their similarity in form to the other occupational type features within the enclosure to the south.
- 7.2.15 A further 4m to the north-west a curving slot (880), 0.43m wide by 0.28m deep and probably structural in nature (section F, Figure 4b), extended into the site from the western limit of excavation. It contained a large number of rounded stones likely to represent packing stones for a timber fence and four sherds of Iron Age pottery. The feature ended in a rounded terminal and may be part of another round house, the rest of the gully existing beyond the area of excavation. Two postholes (937 and 946) lay close to slot 880 and could have been related to the feature. Posthole 937 measured some 0.45m in diameter and 0.15m in depth, posthole 946 measured some 0.35m in diameter and 0.11m deep. The second posthole (946) could feasibly have continued the arc of the gulley hence holding a post that would have supported the roof across the structure entrance.
- 7.2.16 To the north of 880 a linear feature 866 lay on a west-north-west to east-south-east alignment, extending into the site for 4.3m ending in a rounded terminal. It was 1.18m wide and 0.35m deep, with an uneven base possibly indicative of the presence of a series of postholes at the base of the feature. This uneven base to the feature has been taken as indicative that it represents the construction trench for a palisade type timber

structure. Such an interpretation is supported by the presence of such features elsewhere on site. Three isolated postholes (869, 871 and 881) lay in a tight group 1.5m to the east of the ditch terminal.

- 7.2.17 A ring gully for a roundhouse (906) survived in the central part of the site. The roundhouse gully appeared to be enclosed by two linear boundary features (934 same as 943 and 747) set some 21m apart (section G, Figure 4b), also respecting a west-north-west to east-south-east alignment. Linear 934 contained a number of postholes cut into its base and measured some 0.5m wide varying in depth from 0.5m to 0.7m. This feature appeared from this to represent a construction slot for a substantial fence line, which had been re-cut or robbed (751) at a later date on the same alignment. Both the fills of 751 and 934 contained a large concentration of cereal grain, chaff fragments, grass seeds and weed seeds which suggests the deposit is partly comprised of waste from some crop processing activity. Their occurrence in adjacent features probably indicates that they derive from the same activity or event, and may indicate crop processing at this location. The fill of 934 contained fifty-seven sherds of Iron Age pottery. Linear feature 747 was also a substantial feature, measuring some 1.5m wide and 0.5m deep (section H, Figure 4c). Only a single posthole (1091) was identified cut into its base. Most of the circumference of roundhouse gully 906 survived with only a portion absent due to truncation by a medieval furrow. The gully, which encircled an area some 9.3m in diameter, was up to 0.7m wide and 0.15m deep and its fill contained 15 sherds of Iron Age pottery and a single flint flake (section I, Figure 4b).
- 7.2.18 A somewhat irregular shaped pit (981), 0.9m in diameter and 0.3m deep (section J, Figure 4a), lay within the ring gully of the roundhouse, slightly south-east of the centre of the structure. The feature contained a concentration of fuel ash, fired earth some prill and some charred grain leading to the conclusion that the feature was receiving dumped fire waste, possibly from a nearby hearth. No direct stratigraphic relationship linked the feature to the roundhouse structure so any connection remains a matter of conjecture. A single posthole (1079), cut by the pit/hearth, could have represented a surviving element of an internal feature. A short gully (898) of unknown function lay 2m north of the northern limit of 906, it measured 0.51m wide and 0.13m deep was cut at its west end by the Phase 3 ditch 793

Phase 3 (Figs. 4a-c, 5)

- 7.2.19 Features were placed within this phase based on their stratigraphic relationship with Phase 2 features or their alignment with the large ditch (793 same as 809). Ditch 797, also recorded as 792 and 819 (sections B and C, Figure 4a), was 0.8m wide and 0.22m deep. It crossed the site on a sinuous north-east to south-west alignment forming the southern boundary to this phase. The ditch represented the latest of the boundary features identified on the crest of the ridge and was very different in character from the narrow structural slots that preceded it.
- 7.2.20 A very sizeable ditch (793 same as 809) was seen to cross the site on a north-west to south-east alignment (Plate 5). It was traced within the site for 39m, extending beyond the limit of excavation at both ends into the eastern limit of excavation at its northern end and the western limit of excavation at its southern end. At up to 1.78m wide and 0.6m deep, the ditch represented a boundary of real substance (section K, Figure 4b), which contained three fills, primary fill (810 same as 794), an upper fill (811 same as 864) and in the section not illustrated a secondary fill 916. This also suggests that the

feature was open for some time. This boundary ditch also marks a distinctive shift in the alignment of features which could represent a change in the nature of activity on the site. Ditches 793 and 797 were broadly perpendicular to each other.

- 7.2.21 Ring gully or slot 904 appears to cut the Phase 2 ring gully 906. This feature extended for 5.17m within the site from the western limit of excavation curving to the south where it was truncated by Phase 4 slot 753. The gully was 0.45m wide and 0.05m deep and could have represented a circular feature c7.5m in diameter. If this is a correct interpretation, and it is difficult to be certain given that a relatively small part of the feature was present within the site, then it may well represent a roundhouse, possibly a replacement for roundhouse 906. A single flint flake was recovered from within the fill of 904.
- 7.2.22 Further to the north, a possible enclosure (ditches 1094 and 812) containing a sub-rectangular structural slot was included within this phase based on its alignment with ditch 809. The more southerly enclosure ditch (812) extended for 8.3m from the eastern limit of excavation on a north-east to south-west alignment, terminating within the site area. The northern gully (1094) extended from the western limit of excavation, for 8.25m on an east to west alignment, before turning towards the south-east for a further 3.3m before being truncated by a medieval furrow. The two gullies were narrow: 812 measured some 1m wide and 0.3m deep, 1094 measured 0.5m wide and 0.35m deep, and may well have contained posts for a fence line. A single sherd of Iron Age pottery was found within the fill of 812. The two gullies defined an enclosure 13m north to south and more than the full width of the easement at 11.5m east to west. This contained a narrow structural slot (1117) that seemed to form two sides of a structure. The feature formed the southern and eastern sides of the possible building, the northern side truncated by the Phase 4 gully or ditch 1086 and the western side presumably lying beyond the limit of the site. The structure was c. 3.8m north-west to south-east and more than 3.7m north-east to south-west and the slot itself up to 0.4m wide, 0.32m deep and U-shaped in profile (section L, Figure 4c). A series of 13 stakeholes clustered in the area of the structure. Their function was not immediately apparent but it seems likely that they related to structure 1117.
- 7.2.23 A final series of five gullies lay some 13m to the north of enclosure gully 1094. The majority of the features lay on an east-north-east to west-south-west alignment effectively demarcating the northern limit of the site during this phase. Gully 1068, the northernmost of all, was up to 0.58m wide, 0.15m deep (section M, Figure 4c) and extended for 11.8m from the eastern limit of excavation before terminating. Gully 1071 lay only 1m to the south and extended from the western limit of excavation for 5m, also terminating within the site. This feature was more irregular in shape than gully 1068, varying in width from 0.21 to 0.67m and 0.15m deep (section N, Figure 4c), but may have been related. Five sherds of Iron Age pottery were recovered from within the fill of 1071. The terminal of a further gully (712) lay 1.6m to the east of 1071, from where it extended to the limit of excavation. It measured some 0.5m wide and 0.1m deep. Gully 708 lay immediately to the south of ditch 712 on an uneven east-north-east to west-south-west alignment. It measured some 0.7m wide and 0.2m deep and its fill (709 same as 711) contained a concentration of fired earth, smithing slags, some fuel ash, a single flint flake and four sherds of Iron Age pottery. A narrow slot (745), that entered the site from the western limit of excavation 2m to the south of 708, curved northwards within the site to adjoin with 708, 3.65m within the site. The two features appeared to be contemporary; though the relationship between them was

complicated by the presence of a Phase 4 re-cut (1100) for 708. Gully 745 measured some 0.35m wide and 0.22m deep and twenty two sherds of Iron Age pottery were found within its fill.

Phase 4 (Figs. 4b-c, 5)

7.2.24 Curving gully 904 was cut by Slot 753 and boundary ditch 751 by slot 749 (section G, Figure 4b), which were 0.72m wide and 0.15m deep and 0.77m wide and 0.27m deep respectively. Both slots (753 and 749) extended from the western limit of excavation for a little over 3m but no stratigraphic relationship was apparent between the two features. It is unlikely that they were contemporary, the best interpretation being that one replaced the other, though performing the same function. An S-shaped linear feature (1086) which measured some 0.5m wide and 0.2m deep, lay some 35m to the north of 753 on an east-north-east to west-south-west. A single flint flake was recovered from within the fill of 1086 and it cut the Phase 3 structure 1117 (section L, Figure 4c). A re-cut (1100) for the boundary ditch 708 was included in this phase, it measured some 8m long 0.75m wide and 0.2m deep and four sherds of Iron Age pottery and a single flint flake were found within its fill (section N, Figure 4c).

Unphased Iron Age features (Figs. 4a-c)

7.2.25 Two crossed ditches (863 and 807) lay within the enclosure formed partly by 823 (Figure 4a). Ditch 863, which was 0.42m wide and 0.16m deep, was cut by ditch 807, which was 0.35m wide and 0.16m deep. A number of postholes and stakeholes in and around ditch 792 were recorded. A narrow ditch (805) extended 1m into the area of excavation between ditch 816 and gully 824. The feature measured 0.4m wide and 0.08m deep but no relationship with the ditches and gullies around it was apparent. A ditch (718) recorded in evaluation trench 21 (NAA 2004) measured at least 1.3m wide and 0.34m deep and extended out of the area of excavation.

7.2.26 To the north, a single isolated pit or tree bole (779) lay within the vicinity of curving gully 829. It measured some 2m by 1m and 0.1m deep. A concentration of postholes (including 885 and 948,) and two pits (874 and 889) lay around a wide but shallow hollow (746), 3.9m north to south by 3.8m east to west by 0.2m deep. This area may have been a work area related to the concentration of crop processing waste found within ditches 934 and 751. The two pits (874 and 889) measured 0.6m by 0.6m by 0.35m deep and 0.9m by 0.71m by 0.3m deep respectively. Both pits contained a large amount of dumped sub angular stones ranging in size from 0.02m up to 0.4m.

7.2.27 A further narrow linear feature (795) with a terminal at its west end was located south of the terminus of ditch 751. The feature, which was at least 4m long, 0.7m wide and 0.29m deep, was cut at its east end by a medieval plough furrow and may originally have extended further. There was no visible relationship with ditch 793 but this feature cut the fill of hollow 746.

7.2.28 A slot (892) extended into the site 3.5m to the north of slot 880. The feature, which was 0.32m deep, varied somewhat in form towards its base, narrowing from 0.48m to as little as 0.1m wide (section O, Figure 4b). The narrower part of the feature displayed a distinctly rectangular cross-section, certainly structural in character, suggesting that the feature carried a timber wall or fence. The feature had a series of three stakeholes at its base located immediately to the west of the narrow part of the feature. A series of eight postholes lay at or close to the eastern terminal of the feature, three of which were inter-cutting. The earliest in the sequence cut the end of

the structural slot. The very close proximity of the posthole cluster to one another and the end of the slot indicates a relationship between the features. The group of features are likely to represent changes (or repair) to a functional structure altered repeatedly, perhaps over a relatively short time scale.

- 7.2.29 Slot 859, which was 0.5m wide and 0.3m deep, extended for 9m on a slightly curving north-east to south-west alignment adjacent to the eastern limit of excavation. It terminated within the site 5m to the north-east of slot 892. The extent of the feature (859) to the north lay beyond the limit of excavation but may have coincided with the east end of a further linear (759) which crossed the site on an east-south-east to west-north-west alignment. The features may define two sides of an enclosure 21m north to south and more than 11m east to west with an entrance 5m wide between features 892 and 859. It is tempting to suggest that 746 was a hollow formed within this entrance due to heavy traffic of people or animals to and from the enclosure and that the postholes found within the hollow related to some form of gate. Ditch 759 measured some 0.63m wide and 0.33m deep and was parallel to ditch 747 indicating that it could be a re-cut of the boundary hence placing this enclosure between Phase 2 and 3. The fills of ditch 759 contained a single sherd of Iron Age pottery (1122) and two flint flakes (1121). However without radiocarbon dating, this interpretation remains tentative.
- 7.2.30 A further gully (902), which was 0.4m wide and 0.15m deep, extended into the site from the western limit of excavation and terminated 0.33m short of the ring gully 906. The stratigraphic relationship between gully 902 and the Phase 3 gully 904 could not be determined by excavation. Gully 1177 extended from the east side of roundhouse gully 906 for 1.6m. It was clear that the feature cut or was cut by the ring gully but the precise relationship likewise could not be determined by excavation. Gully 1177 measured 0.44m wide and 0.14m deep. Another short gully (757) lay to the north of the roundhouse. Gully 757, which was 0.4m wide and 0.21m deep, was cut by unphased ditch 759.
- 7.2.31 North of gully 747 was a smaller curving slot or gully (1155) with a large posthole or pit (1182) close to its terminal (Figure 4c). Gully 1155 measured 0.32m wide and 0.24m deep, pit 1182 measured 0.7m in diameter and 0.18m deep. To the east a narrow curving slot of structural character (1088), 0.22m wide and 0.1m deep, lay immediately to the north of Phase 3 enclosure ditch 747. There was no clear indication of the function or date of this feature.
- 7.2.32 Two gullies and a posthole or small pit lay between the northernmost Phase 3 gully series and possible enclosure formed by gully 1094 and 812. Gully 1084 extended into the site on an east to west alignment from the western limit of excavation for 2m before ending in a rounded terminal. It measured 0.65m wide and 0.2m deep and a single sherd of Iron Age pottery was recovered from within its fill. Gully 1082 located 0.66m to the south of slot 745, was traced for 4m on a north-west to south-east alignment. The gully (1082) measured 0.44m wide and 0.13m deep and its fill contained fuel ash, a small amount of prill and smithing slag and three sherds of pottery. Two of the pottery sherds have been identified to be of a post-medieval date and may be later intrusions, the third sherd was dated to the Iron Age. It was unclear if the feature originally was more extensive. The single pit or posthole (1066), 0.56m across and 0.23m deep, lay 1.34m to the west of gully 1082. It represented an isolated feature of uncertain function, however it is possible that these three features represent

the remains of another roundhouse that was severely truncated by the deep plough furrow.

Phase 5

- 7.2.33 The entire site was truncated by a series of medieval plough furrows running from the south-east to the north-west. On the hill crest the furrows were very shallow and truncated by later ploughing and erosion, but down slope to the north they increased in depth. The large furrow that truncated features 795, 906 and 1082 was deeper and wider than all of the other furrows measuring some 3m wide and up to 0.25m deep. The furrows to the north and east of this feature were more tightly packed together than those located to the south and west. This probably indicates that it was a truncated field boundary rather than a furrow.

7.3 Excavation at Harehill Moor

- 7.3.1 During monitoring of topsoil stripping on a gas pipeline from Cowpen Bewley, North Yorkshire to Warden Law, County Durham a small Iron Age settlement site was discovered (Figure 2c). The site was located south east of Haswell Plough and west of Haswell Moor County Durham (NZ 378 415, Figure 6).
- 7.3.2 The pipeline easement was 12m wide; the features extended along the corridor for 85m and consisted of three possible roundhouses, a ditch, a number of pits, post and stakeholes and a modern hedge line (Figure 7a-b). All three roundhouses extended out of the area of excavation and although two of them had multiple phases of construction, phasing between the roundhouses is impossible at this stage.
- 7.3.3 At the northern extremity of the site were two curvilinear ditches (2004, 2054) thought to form part of a round house with an entrance facing west (Plates 6 and 7). Ring-gully 2004 measured between 0.9m and 0.49m wide and was between 0.37m and 0.23m deep (sections A and B, Figure 7a). Ring-gully 2054 measured between 0.63m and 0.55m wide and was some 0.6m deep (sections C and D, Figure 7a). These were cut by another curvilinear (2002 same as 2006) that also cut two shallow pits (2047, 2073) and an indistinct gully (2051). Ring gully 2002 measured 0.74m wide and 0.45m deep (sections A-D, Figure 7a), pit 2047 measured 1.92m by 0.77m and was 0.15m deep. Pit 2073 measured 0.25m in diameter and was 0.15m deep. There was a shallow posthole (2086) measuring 0.24m in diameter and 0.04m deep, within the arc of 2002/2006.
- 7.3.4 Further south a ditch (2008) cut across the easement from east to west and had a recut visible in section. Ditch 2008 measured some 1m wide and 0.26m deep, its re-cut measured approximately 0.4m wide and 0.16m deep. South of this ditch was a 'kidney' shaped slot (2020) and five stakeholes. Beneath the slot was a stakehole (2025), which was cut by a posthole (2023), which was in turn cut by 2020. Feature 2020 measured some 4m long, 0.38m wide and 0.14m deep, the stakeholes were all approximately 0.05m in diameter and 0.1m deep. Posthole 2023 measured 0.2m in diameter and 0.04m deep. South of this slot was a smaller straight slot (2037) measuring 1.8m by 0.29m and 0.06m deep.
- 7.3.5 Situated to the south of these features was a further curvilinear feature thought to be the remains of a round house (2012, Plate 8). It measured some 0.8m wide and 0.3m deep (sections E and F, Figure 7a). Inside the arc of 2012 were two postholes (2041,

2043) which measured 0.3m in diameter, 0.25m deep and 0.4m in diameter and 0.35m deep respectively.

- 7.3.6 A third round house was located to the south of 2012 along the western edge of excavation (Plate 9). It comprised two terminating curvilinear features which probably formed a ring gully with an entrance facing south-east. The northernmost of these (2049) was re-cut (2110 same as 2092) and then re-cut again (2112 same as 2090, see sections G and H, Figure 7b). Ring gully 2049 measured 1.42m wide and 0.44m deep re-cut 2110 measured 1.2m wide and 0.3m deep, re-cut 2112 measured between 1m and 0.6m wide and 0.2m deep. A stakehole (2089) measuring 0.1m wide and 0.25m deep, was cut into the fill of 2090. The southern curvilinear gully had three phases of construction (section I, Figure 7b). The original cut 2117 was re-cut by 2050 which in turn was cut by 2057. Ring gully 2117 was substantially truncated by 2050 which measured 1m wide and 0.5m deep. Re-cut 2057 measured 0.9m wide and 0.3m deep. A posthole (2045) which measured 0.2m by 0.33m by 0.15m deep, was situated outside of the arc of the roundhouse.
- 7.3.7 A modern hedge line (2015) was excavated on the eastern edge of the easement. It was recorded for some 20m within the corridor and measured some 0.8m wide and varied in depth.

8.0 ASSESSMENT OF SITE ARCHIVE

8.1 Initial analysis

- 8.1.1 As part of the assessment of the site records the following level of analysis has been undertaken:
- 8.1.2 A provisional matrix has been drawn up for the excavation sites showing the stratigraphic relationships between the individual contexts. Initial dating from the recovered artefacts has been integrated into each matrix in order to allow the sites to be divided into chronological periods.
- 8.1.3 Plans and sections were checked against context record sheets to ensure full cross-referencing. Catalogues of context and illustration records have been input onto a computerised database.
- 8.1.4 Catalogues of slide and print photographs have been input onto a computerised database.
- 8.1.5 The quantification of the site record is as follows:

Primary archive inventory *Pig Hill*

Context descriptions	493
Plans	37
Sections	230
Colour slides (films)	23
Colour photographs and negatives (films)	24

Harehill Moor

Context descriptions	118
Plans	4
Sections	43
Colour slides (films)	6
Colour photographs and negatives (films)	7

8.2 Recommendations for further analysis

8.2.1 Further work needs to be carried out on the stratigraphic record in conjunction with revised dating of the artefactual record in order to provide a more comprehensive understanding of the site chronology. This will involve a detailed analysis of the stratigraphic and spatial interrelationships of the features and deposits which comprise the site record. Such an approach will allow for a more complete and comprehensive understanding of the archaeology to be developed. Radiocarbon dating of 11 features will be undertaken to further inform this process.

8.2.2 Further analysis of the archaeological record and synthesis of specialist information should be carried out, directed towards establishing an interpretation of the site record and giving explanations behind the conclusions reached within a report for publication. A definitive series of phase plans should also be drawn up to illustrate the main structural features and stratigraphic relationships phase by phase.

8.3 Storage and curation

8.3.1 The written, drawn and photographic records are currently held by NAA. Provisional assessment of the palaeoenvironmental samples has been undertaken. Artefacts recovered from this process have been forwarded to the relevant specialists.

8.3.2 Subject to finalisation of discard policies after further analysis (particularly with respect to environmental material) it is intended that the site archive (paper records, artefactual and environmental material) will be transferred to the appropriate depositories. All material would be appropriately packaged for long-term storage in accordance with both national guidelines and to the requirements of the relevant museum.

8.4 Specialist finds assessments

Processing and quantification

8.4.1 Washing of the bulk finds, including animal bone, was completed after the excavation ended. All finds recovered have been recorded, marked where appropriate, packed in labelled bags and placed in labelled museum storage boxes. A finds database was produced in order of context number. This database tabulates the artefact type and quantity and includes a brief description. The artefactual and environmental assemblages from the sites on the Cowpen Bewley to Warden Law pipeline are summarised below.

Table 1: Finds and environmental assemblage

Excavation sites

Type	Site	Site
	Harehill Moor	Pig Hill
Pottery (sherds)	19	162
Flint		21
Iron objects		3
Copper objects		1
Slag and smithing debris	1	22
Clay pipe		3
Glass		5
CBM		1
Fired clay		6
Stone	3	
Animal bone	3	8
Environmental samples	60	207

8.4.2 Pottery

Summary

Preliminary assessment of the pottery was undertaken (Appendix B) in order to obtain information on the chronology and nature of the pottery assemblages collected during the project. The range of pottery fabrics present was noted and information on the extent and nature of any further examination of the material was provided. A medium-sized assemblage of pre-Roman Iron Age pottery was recovered from Pig Hill. A small assemblage of similar material was collected from Harehill Moor. Small amounts of medieval and later pottery were recovered from both sites and a medium-sized assemblage of medieval pottery, with a few later pieces was recovered during monitoring. The medieval elements of these pottery assemblages appear to belong to the 13th and 14th centuries, with only a very small quantity of relatively recent material and little or no post-medieval ceramics being present. The Iron Age assemblages all appear to pre-date the Roman period on the basis of the absence of any overtly Roman-British material.

Recommendations

All of the pre-Roman Iron Age assemblages are worthy of further analysis because of the paucity of such material from south-east Durham. While useful comparison may be made with the substantial excavated assemblage from Thorpe Thewles, there are few other comparative assemblages from the east coast area north of the River Tees, although material recently excavated from Catcote, near Hartlepool may be of relevance once the report is available. The total minimum number of pre-Roman Iron Age vessels present may be in the order of 20.

The pre-Roman Iron Age elements of the assemblages have the potential to contribute substantially to the further understanding of sites of this period and their regional context. This material should be examined and analysed leading to production of a report containing:

- A detailed account the pottery fabrics identified, with quantification tabulated by context, together with relative proportions of each fabric (by weight to nearest 5g).
- A review of the pottery in its regional context.
- A note of the contribution of the ceramic assemblage to the interpretation of site status and function.

The medieval pottery is of less value because of the small amount present and the absence of detailed structural information to support chronological analysis. It is recommended that the medieval pottery collected during monitoring be examined and reported upon to detail:

- The range and approximate proportions of fabric types present
- Any contribution to the understanding of site function, chronology and status.
- The provenance and chronology of other medieval and more recent pottery should be briefly noted but not subject to further discussion.

8.4.3 Flint

Introduction

A small number of flints were recovered during the project, including pieces found during monitoring and during the excavations at Pig Hill and Harehill Moor. These were subjected to assessment by an appropriate specialist (Appendix C).

Monitoring

Summary

The assemblage collected during monitoring comprised 5 pieces of struck flint (24.5g) from 4 separate fields. The material consisted of 2 flakes, 1 core, 1 core rejuvenation flake and a retouched secondary guide flake. The material was not a homogenous collection and was probably of Neolithic and early Bronze Age date. The raw material which was probably obtained from local sources was used sparingly with curation of flint cores and high quality knapping evident.

Recommendations

The flint collected during monitoring is of limited further potential, although the guide flake from field 8/9 may indicate the presence of an early to middle Neolithic settlement. However, no further study is required.

Pig Hill

Summary

The flint assemblage collected during excavations at the Pig Hill site comprised 21 pieces of struck flint (130g) from 13 separate contexts. The material probably contains discreet elements of Neolithic and early Bronze Age date and is of a domestic nature. A restricted typological range of flint is present and material was probably obtained from local sources.

Recommendations

Little is known of the regions Neolithic and Bronze Age lithic assemblages, the transition from Neolithic to Bronze Age flint working technology requires further study. This assemblage does not enhance the picture but does serve to illustrate the need for further fieldwork. The fresh state of the micro-wear and the possibility of earlier secondary Neolithic flint assemblages is important. There are probably sealed or recently disturbed flint assemblages nearby. However the material collected needs no further work except the illustration of selected pieces.

Harehill Moor

Summary

The flint collected during excavations at the Harehill Moor site comprised only 1 piece of struck flint (9.2g), a double side and end scraper. The implement was manufactured from till flint and exhibits a very fine dihedral flaking on the butt /platform and is a diagnostic type that *tends* to be restricted to 'Beaker' assemblages.

Recommendations

Despite being heavily damaged the scraper is finely worked. A single scraper is of limited potential but the quality of the piece's knapping (despite the damage) is unusually high. However, the material is of limited potential and requires no further study.

8.4.4 Metalworking debris

Summary

Industrial waste collected during both excavations and elements recovered from the analysis of soil samples were subjected to specialist examination (Appendix D). A single flake of hammerscale was recovered from Harehill Moor but substantial evidence relating to metalworking activities was found during the excavation at Pig Hill. The initial analysis of the evidence from Pig Hill has shown concentrations of smithing activities linked to the rectangular structure near the crest of the hill to the south of the site. Another smaller concentration of metal working debris was located at the far northern edge of the site.

Recommendations

This kind of evidence is extremely rare in the north-east of England north of the River Tees and comparison with other sites will greatly add to an understanding of the metalworking during the Iron Age in the region. However no further analysis of the material recovered is required.

8.4.5 Stone

Summary

Two fragments of worked stone were recovered during the excavation at Harehill Moor. They were both found within the primary fill of the roundhouse gully 2002 and were subjected to specialist examination (Appendix E). The first fragment (2106 AB) was part of the lower stone of a saddle quern, probably only representing about one quarter or less of the whole. The second piece (2106 AC) was a rounded and slightly pentangular shaped rubbing stone.

Recommendations

The worked stone is of limited potential and no further study is required.

8.4.6 Metalwork

Summary

Two iron objects and a single copper alloy object were collected from Pig Hill, the former two were from within evaluation trench 26, the latter from a plough furrow. These items were subjected to X-ray and conservation assessment (Appendix F). The copper-alloy object was a strap end. Surface decoration was faintly visible on the strap end which appeared to be made from a different alloy than the rivet which held it.

Recommendations

Although some useful information has been gained from the initial examination of these objects, no further analysis is recommended. The copper-alloy strap end should be conserved and retained.

8.4.7 Environmental samples

Introduction

Sediment samples were taken during the excavations at Pig Hill and Harehill Moor and subjected to specialist examination (Appendix G). All of the samples were washed in a 'Siraf' tank (Williams 1973) using a floatation sieve with a 0.5mm mesh and an internal wet-sieve of 1mm mesh for the residue. Both residue and flot were dried, and the residues subsequently re-floated. The dry volume of the flots was measured, and the volume and weight of the residue recorded. The residue was sorted by eye, and environmental and archaeological finds picked out. A magnet was run through each residue in order to recover magnetised material such as hammer scale and prill. A count was made of the number of flakes or spheroids present. The residue was then discarded. The flot of each sample was studied under a low power binocular microscope to record the presence of environmental finds (i.e. snails, charcoal, carbonised seeds, bones etc). A count or estimate was made of the number of fragments of charred grain, chaff and individual weed seeds during the scanning.

Pig Hill

Summary

A total of 87 samples were collected, fourteen of which were charcoal and samples for radiocarbon dating, the remainder being soil samples. They were processed in the manner described above and a total of 1482.5 litres of sample were processed. No phasing information for the site was available for this assessment, largely due to the relative absence of pottery and lack of horizontal stratigraphy, so no chronological perspective is available.

The evidence from the samples showed that crop processing and domestic activity were occurring on the site. There is some indication for the spatial distribution of the evidence suggesting a focus of crop processing in the centre and possibly the south central area of the site. The survival of all environmental evidence except charred plant remains is either very poor or non-existent. Only burnt bone or tooth enamel fragments survived and no shells or waterlogged remains were present. Some seeds are heavily mineralized and may not be charred.

The only domestic animals identified from the site were a single cattle bone collected during excavation and two pig tooth fragments from the samples. Barley and wheat are both present as crops, although the specific types have yet to be identified. A single fragment of hazelnut shell is the only other confirmed food taxa. There is an abundance of charred grass seeds, tuberous material (probably grasses) and probable heather twigs which may reflect their use as fuel and tinder or possibly for bedding. Previous studies of this period in this part of County Durham are very limited. Huntley (Huntley and Stallibrass 1995) records only two Iron Age plant assemblages in this area, both studied by Van der Veen. These include the extensively sampled site at Thorpe Thewles (Van der Veen 1987) and a small site at Coxhoe. Plant item densities at Thorpe Thewles are similar to those from Pig Hill and the relative abundance of chaff and grasses was also noted at Thorpe Thewles and other contemporary sites (Huntley and Stallibrass 1995).

Recommendations

Further study of the material from the samples should be restricted to the charred plant and charcoal remains. Although only two samples contained any great abundance of charred seeds and chaff fragments, both might reflect the same specific depositional event and need not reflect the crops being grown and utilised at the site. The small numbers of grain and particularly chaff in the majority of the samples are more likely to closely reflect both the types and relative importance of the cereal crops grown and harvested in the area. Despite the poor preservation of the grain and its probable low identification rate, the identification of the chaff from the site should be straightforward and will give a clear indication of the crops being processed at the site. The diversity of charred weed seeds appears to be quite low, but the consistent occurrence of grass seeds, including heath grass, and other taxa may be reflective of the ecology of the arable fields in the area, or of other sources for the charred seed assemblage. The mineralized seeds are problematic but these can be separated from the charred material by careful examination.

A selection of the richer charcoal samples requires analysis in order to assess the range of fuels being used at the site and to attempt to account for the differences between samples that contain predominantly wood charcoal and those that include abundant twigs. The identification of the latter as heather requires confirmation.

All samples selected for radiocarbon dating should be identified and the most suitable material selected for dating. The most problematical area is the charred tuberous material. Several taxa are clearly represented and the tubers are abundant in many samples and their identification is likely to significantly enhance the interpretation of the charred plant assemblages.

All the samples bar two have been sorted for charred seeds, grain, chaff and a selection of tubers so the archaeobotanical study will be restricted to the identification of the sorted material, checking the flots for efficiency of sorting and identification of the tubers. This should be carried out for all samples that produced identifiable material. For the analysis of the charcoal it is recommended that this is restricted to the 14 samples where flot size exceeds 15ml, and a rapid scan of some of the 10-15ml samples to confirm the identification of the twiggy material.

Harehill Moor

Summary

The bulk of the 22 samples collected from Harehill Moor produced no more than a few charred weed seeds and a little charcoal. However, context 2082 contained a couple of charred grains, two pieces of chaff, grass seeds, a number of weed seeds, a hazelnut shell fragment and a charred tuber. Most of the richer samples derived from ditches 2002, 2004 and 2006. These produced charred cereal grains, occasional chaff fragments and a few weed seeds. The richest sample derived from context 2068 and included the largest charcoal component.

Recommendations

Two areas deserve further study within this site. The very limited number of pottery sherds recovered from the site indicates that radiocarbon dating will be required to place the site within an absolute chronology. The second area of work relates to the charred plant material. Identification of the material already sorted from the samples will allow the recognition of the crops being utilised and grown, and perhaps some aspect of the soils and ecology of the arable fields.

9.0 SIGNIFICANCE OF RESULTS

9.1 Stratigraphic analysis

9.1.1 Preservation of stratigraphy on such a scale as was recorded at Pig Hill and Harehill Moor is unusual in prehistoric sites within the region, marking both sites out as of special significance. The stratigraphy on the Pig Hill site was such that it has permitted a provisional sequence of developments within the site to be established and some phasing of the contexts to be achieved. However, this phasing is relative and due to the lack of horizontal stratigraphy across the site an overall site chronology cannot yet be established. This could be addressed by obtaining a series of radiocarbon dates across the site.

9.1.2 The presence of buildings such as roundhouses and other rectilinear structures within a dated chronological sequence will allow variations in constructional techniques and of domestic arrangements to be studied. The two sub-rectangular structures are of unusual character and may represent small fenced enclosures. However, the possibility that they were buildings cannot be dismissed and as a result of the rarity of such structures in the Iron Age this makes them especially important. The further study of variations within enclosure features, in terms of their form, date, scale and spatial distribution will allow the evidence from the sites to be contrasted with that from other sites both in County Durham and the wider region. This comparison will facilitate a greater understanding of settlement morphology and socio-economic exploitation of the landscape within the region during the Iron Age.

9.2 Pottery assemblages

9.2.1 The artefact assemblages from any excavations are of particular importance when inherently dateable and contained within an established chronological sequence. The pottery recovered from both Pig Hill and Harehill Moor will therefore enhance the significance of the results of the excavation by placing the other evidence within a broad chronological framework. Analysis of the fabric, form and types of pottery

vessels represented will provide important information regarding the manufacture and function of the material.

- 9.2.2 Iron Age pottery assemblages are extremely rare within the region. The study of the pottery from the Pig Hill and Harehill Moor and its distribution patterns will serve to enhance our understanding of both the activities undertaken within the sites and contribute to the understanding of the material culture of the region. Obtaining absolute dating from radiocarbon analysis of charcoal within contexts containing pottery will increase the limited data currently available for relative dating. This information is paramount in forwarding Iron Age studies in the region (Haselgrove *et al.* 2001) and has the potential to provide a better understanding of the internal chronologies of sites across a much wider area.

9.3 Flint

- 9.3.1 A small number of flint flakes and tools were recovered during the project. The assemblages proved of limited value except to show that there are probably sealed or recently disturbed flint assemblages close to the Pig Hill site, beyond the area of excavation.

9.4 Metal working debris

- 9.4.1 Substantial evidence relating to metalworking activities carried out on the site of Pig Hill was recovered during the excavation. The initial assessment of this evidence has shown concentrations of smithing activities linked to the rectangular structure near the crest of the hill to the south of the site. Another smaller concentration of metal working debris was located at the far northern edge of the site.
- 9.4.2 Evidence of this kind is extremely rare in the north-east of England north of the River Tees and comparison with other sites will significantly contribute to an understanding of metalworking during the Iron Age within the region. However no further analysis of the material recovered is required.

9.5 Stone

- 9.5.1 Two fragments of worked stone were recovered during the excavation at Harehill Moor. They proved of limited value except to indicate the presence of domestic activity within the vicinity of roundhouse gully 2002.

9.6 Metalwork

- 9.6.1 Although some useful information has been gained from the initial examination of these objects, no further analysis is recommended. The copper-alloy strap end should be conserved and retained.

9.7 Environmental evidence

- 9.7.1 The initial assessment of the environmental evidence has provided an indication of the types of agricultural activities carried out on both excavation sites. The results from Pig Hill have also provided an indication of the spatial distribution of such activities.

- 9.7.2 However the significance of the environmental evidence lies with closer species identification linked with datable contexts which will provide spatial information of agricultural activities throughout the phases of occupation. The types and relative importance of the cereal crops grown and harvested within the vicinity of the site could be ascertained from the further analysis of the small numbers of grain and particularly chaff in the majority of the samples. Identification of the chaff will give a clear indication of the crops being processed at the site. Analysis of charcoal samples from the site has shown variation in the fuels being used, some samples were predominantly wood charcoal while others included abundant heather twigs and possibly grass tubers. The latter suggests that uprooted dry heather plants or even turfs may have been used as a fuel source. Another possibility is that the charred tuberous material relates to its use as thatch or bedding and subsequent disposal by burning. Both of these hypothesis need to be tested.
- 9.7.3 Of the samples available for radiocarbon dating the carbonised seeds, tubers and especially the charred hazelnut shells are of greater value than the wood charcoal. This is due to inaccuracies caused by the 'old wood effect' by charcoal derived from mature trees. The process of radiocarbon dating refers to the time of death of the wood and not the point of deposition, therefore as large timbers can be in use for some considerable time, an inaccuracy occurs. Samples that are deposited soon after death provide a much more accurate radiocarbon age.
- 9.7.4 Previous studies of this period in this part of County Durham are very limited. Huntley (Huntley and Stallibrass 1995) records only two Iron Age plant assemblages in this area, both studied by Van der Veen. These include the extensively sampled site at Thorpe Thewles (Van der Veen 1987) and a small site at Coxhoe. The addition of the data from Pig Hill would greatly increase knowledge of Iron Age crop and fuel usage in the region.
- 9.7.5 The sites at Pig Hill and Harehill Moor are of especial regional archaeological significance as they represent Iron Age settlement sites which are extraordinarily rare in the north-east of England north of the River Tees. The presence of structural features representing occupation and enclosures relating to the exploitation of the surrounding landscape together with artefactual assemblages adds substantially to their already considerable importance.

10.0 RECOMMENDATIONS FOR FURTHER ANALYSIS

10.1 Introduction

- 10.1.1 The construction of the Cowpen Bewley to Warden Law Pipeline has resulted in the investigation of two previously unknown Iron Age sites, of which Pig Hill represents one of the largest areas of investigation of a rural Iron Age site in County Durham. The significance of the results indicates that further analysis of the site archives will provide a rare opportunity to improve upon the existing corpus of information available for such sites. In accordance with the procedures of analysis and report preparation established by English Heritage (1991, 20) this should concentrate upon those aspects of the excavation results where the post-excavation assessment has identified the potential for further analysis to fulfil both national and regional research

objectives. The potential for further analysis in respect of the excavations on the Cowpen Bewley to Warden Law Pipeline can be summarised as follows:

10.2 Stratigraphic record

10.2.1 Further analysis of the site archive for Pig Hill, and in particular refined stratigraphic phasing supplemented by radiocarbon dating will enable the potential of several aspects of research to be realised. Of prime importance is the functional use of areas of the site and the variation of their location over time. This relates to the presence of enclosures associated with domestic settlement, indicated by the presence of roundhouse gullies recti-linear gullies and other enclosures related to stock management.

10.2.2 The absence of a large boundary ditch would seem to indicate that the site represents a substantial unenclosed settlement, which has undergone numerous alterations within a substantial period of occupation. Closer dating of the stratigraphy of the site by radiocarbon assay will allow a study of these variations within a defined chronological framework.

10.2.3 Comparison between the site at Pig Hill and the much smaller Harehill Moor site, will enable a better understanding of the latter site to be gained than would have been possible if the site had been identified in isolation. Further comparison with the small number of similar sites in the region will facilitate a better understanding of the development of settlements within the region in the Iron Age. This would accord with English Heritage (1997, 48) research agenda P8 which relates to the late Iron Age.

10.3 Artefactual record

10.3.1 The potential for further analysis of the artefactual record has been set out in the individual specialist assessments. Those material types which in particular have potential for further analysis include:

- Iron Age pottery
- Medieval pottery collected during monitoring
- palaeoenvironmental material

10.3.2 The value of each category of material within the site archive for further analysis will be enhanced by association within an integrated study combining the artefacts and environmental material with the stratigraphic record, radiocarbon dates and documentary evidence.

10.3.3 There are six flints that were recommended for illustration, these include three scrapers, (records 5, 11, 13, contexts 700, 721, 756) 74, 266: squares 31, 78 context 200) a tool trimming (record 8, context 707), a polished flake (record 14, context 773) and a flaked flake (record 18, context 1087).

10.4 Reporting and publication

10.4.1 An integrated post-excavation report will be prepared on completion of the analysis works. A version of the report should be prepared to publication standard for submission to a regional or national journal.

10.4.2 The analysis report shall contain:

- A summary of the project background
- The site location
- A methodology
- A summary of the results including phasing
- An interpretation of the results in relation to other sites in the region
- A post-excavation analysis of the stratigraphic and other written, drawn or photographic records
- A catalogue and post-excavation analysis of each category of artefact recovered during the excavation
- A catalogue and post-excavation analysis of the results of the soil sampling programme
- Catalogues and post-excavation analyses and/or summary reports of all scientific dating procedures or other analyses carried out
- A summary of the contents of the project archive and its location
- Appendices and figures as appropriate
- References and bibliography for all sources used

11.0 CONCLUSIONS

- 11.1 The archaeological investigation along the Cowpen Bewley to Warden Law pipeline has identified a number of sites of archaeological interest. The sites at Pig Hill and Harehill Moor are of especial archaeological significance as they represent Iron Age settlement sites which are extraordinarily rare in the north-east of England north of the River Tees. The presence of structural features representing occupation and enclosures relating to the exploitation of the surrounding landscape together with artefactual assemblages adds substantially to their already considerable importance.
- 11.2 The site at Pig Hill is of exceptional importance representing a relatively well preserved and extensive multiphase unenclosed settlement site probably occupied over a considerable period of time. It is clear from the investigation that the excavated area represents a part of a much more extensive settlement that has undergone a number of changes of role. We can infer from the numerous shifts and realignments of the enclosures and boundaries that the excavated features represent a long history of occupation, however this inference can only be tested by radiocarbon dating.
- 11.3 The English Heritage Research Agenda (1997) describes a research framework within which the importance of individual sites can be judged with regard to their ability to add to our understanding of the past. This document draws attention to areas of study regarded as poorly understood or of particular interest. Two areas highlighted by the research agenda are of relevance to the archaeological sites identified along the Cowpen Bewley to Warden Law pipeline. These are the processes of change (PC3), 'communal monuments into settlement and field landscapes' (c.2000-300 BC), which draws attention to the gradual change from the monument-dominated landscape of the Neolithic and Early Bronze Age to the settlement-dominated landscape of later prehistory, noting that such changes were neither uniform nor synchronous across Britain. In addition the research framework also indicates the importance of the study of Late Iron Age hillforts, enclosures and settlements (P8).

- 11.4 Detailed analysis of the artefacts from Pig Hill and Harehill Moor and the pattern of their distribution will serve to enhance our understanding of both the activities undertaken within the sites and add to the understanding of the material culture of the region. A medium-sized assemblage of pre-Roman Iron Age pottery was recovered from Pig Hill and a small assemblage of similar material was collected from Harehill Moor. Iron Age pottery assemblages of any substance are extremely rare within the region and the existing chronological framework for the period is poorly understood (Haselgrove *et al.* 2001). Radiocarbon dating of deposits containing pottery would greatly improve the data set for this region. In a recent paper outlining an agenda for study within the Iron Age (Haselgrove *et al.* 2001) the importance of acquiring accurate dates for early Iron Age metalworking residues was highlighted. The paper also stated the need for further study of ironworking processes in general, in order to better understand the changing roles of these objects through time. Further analysis of the distribution of the metalworking debris collected from Pig Hill has the potential to partially address some of these issues, but again dependant on a refined stratigraphic phasing of the site. The significance of the environmental evidence lies with closer species identification linked with a datable depositional sequence which will provide spatial information relating to the foci of agricultural processing or domestic activities throughout the various phases of occupation. Previous studies of this period in County Durham are very few, Huntley (Huntley and Stallibrass 1995) recording only two Iron Age plant assemblages in this area, at Thorpe Thewles (Van der Veen 1987) and a small site at Coxhoe. A full analysis of the data from Pig Hill would greatly enhance the understanding of changes in Iron Age agricultural regimes through time, which is considered to be an extremely important area of study (Haselgrove *et al.* 2001).
- 11.5 The scale of the investigation of the site at Pig Hill allows facilitates an understanding of unenclosed settlements of Iron Age date. Such a site is significant for two reasons; few occupation sites of Iron Age date are known in the region and, more importantly, unenclosed sites are rarer still. The process by which the relatively nuclear enclosed sites of the Bronze Age and early Iron Age are replaced or supplemented by larger unenclosed settlement sites is not well understood within the region as a result of the relatively small number of sites that have been investigated so far. The identification of prehistoric sites in the north-east region is problematic due to the predominance of boulder clay subsoils that make the identification of sites by aerial photography difficult. The identification of unenclosed settlements by such means is rendered particularly difficult since, by definition, they lack large boundary ditches that lend themselves to identification as cropmarks. This has resulted in the present situation whereby the identification of sites by excavation is of considerable importance within the region as a whole.
- 11.6 Regional variation within the British Iron Age is considered to be a fundamental objective of research (Haselgrove *et al.* 2001, English Heritage 1997). Further analysis of the features and artefacts from the sites at Pig Hill and Harehill Moor will permit a greater understanding of unenclosed settlements of Iron Age date. A series of eleven radiocarbon dates spread across the site of Pig Hill will refine the stratigraphy and enable changes in the settlement through time to be studied. Four radiocarbon dates are required to elucidate the phases of occupation at Harehill Moor. Combining the dates with the artefactual data collected from Pig Hill will effectively illustrate the changes in agricultural and metalworking activities throughout the occupation of the site. Combining the data thus achieved from Pig Hill with the evidence from Harehill Moor and the limited number of similar excavated sites within the region will vastly

improve our understanding of Iron Age life in County Durham. The results of the excavations of the sites at Pig Hill and Harehill Moor, when published, will therefore contribute substantially to the regional picture and add to the study of settlement distribution and the poorly understood process of settlement change within the region. This contribution to settlement models for the region will enable a greater understanding of how such a settlement pattern fits within the variations at a national level.

Report No: NAA 04/103
Date: December 2004
Project No: 526
Text: Gav Robinson, Greg Speed, Graeme Young
Edited by: Paul Johnson, Mike Bishop
Illustrations: Andy Durkin

REFERENCES

- Atkinson, F (1974) *The Industrial Archaeology of North-East England*-Volume One David and Charles (Holdings) Ltd
- Atkinson, F (1974) *The Industrial Archaeology of North-East England*-Volume Two: *The sites* David and Charles (Holdings) Ltd
- Bolton J.L. (1980) *The Medieval English Economy 1150-1500*. London
- Bonnor L. (2002) *Cowpen Bewley to Warden Law Proposed Gas Pipeline. Archaeological Desk-Based Assessment*
- English Heritage (1991) *Management of Archaeological Projects*
- English Heritage (1997) *Research Agenda* Draft report
- Groundwork Archaeology (2002) *Cowpen Bewley to Warden Law Proposed Gas Pipeline. Archaeological Desk-Based Assessment*. Unpublished client report
- Groundwork Archaeology (2003) *Cowpen Bewley to Warden Law Proposed Gas Pipeline. Archaeological Fieldwalking and Field Reconnaissance Survey* Unpublished client report
- Haselgrove, C *et al.* (2001) *Understanding the British Iron Age: An Agenda For Action* Salisbury: Trust for Wessex archaeology
- Hoskins W G (1955) *The Making of the English Landscape* (1986 reprint). Harmondsworth, Penguin
- Huntley, J.P. and Stallibrass, S. 1995 *Plant and vertebrate remains from archaeological sites in Northern England*. Res. Rep. No. 4. Architectural and Archaeological Society of Durham and Northumberland.
- IGS (1977) *Geological Survey Ten Mile Map (North Sheet)*
- IGS (1979) *Geological Survey Ten Mile Map (North Sheet)*
- Jarvis, R. A. *et al.* (1984) *Soils and Their Use in Northern England* Soil Survey of England and Wales Bulletin No. 10
- Kinnes, I.A., and Longworth, I.H., (1985) *Catalogue of the Excavated Prehistoric and Romano-British Material in the Greenwell Collection*. London. British Museum publications Ltd.
- NAA (2003a) *Harehill Moor, Cowpen Bewley to Warden Law Gas Pipeline: Archaeological Project Design* Unpublished Northern Archaeological Associates
- NAA (2003b) *Cowpen Bewley to Warden Law Gas Pipeline Watching Brief: Written Scheme of Investigation* Unpublished Northern Archaeological Associates Report 03/79

- NAA (2003c) *Cowpen Bewley to Warden Law Gas Pipeline: Topographic Survey And Archaeological Trial Trenching Archaeological Methods Statement* Unpublished Northern Archaeological Associates Report **03/39**
- NAA (2003d) *Tancred Quarry, Scorton, North Yorkshire: Archaeological Watching Brief.* Unpublished Northern Archaeological Associates Report **03/137**
- NAA (2004) *Cowpen Bewley to Warden Law Gas Pipeline: Topographic Survey And Archaeological Trial Trenching Report* Unpublished Northern Archaeological Associates Report **04/104**
- Pocock and Norris (1990) *A History of County Durham* Philmore and Co. Ltd.
- SSEW (1983) *Soils of England and Wales Sheet One Northern England*
- Tabor R. and Johnson P. (2000) Sigwells, Somerset, England: Regional Application and Interpretation of Geophysical Survey in *Antiquity* **74**, 319-325
- Terra Firma Consulting (2003a) *Cowpen Bewley to Warden Law Proposed Gas Pipeline. Project Specification for Geophysical Survey, Topographical Survey Archaeological Evaluation* Unpublished client report
- Terra Firma Consulting (2003b) *Cowpen Bewley To Warden Law Proposed Pipeline Project Design For Archaeological Excavation Of A Prehistoric Settlement (Site 7)* Unpublished client report
- Van der Veen, M (1987) The plant remains. In D. H. Heslop, *The Excavation of an Iron Age Settlement at Thorpe Thewles, Cleveland, 1980-1982*. CBA Research Report 65, London, 93-99 and M5:E1-14.
- Van der Veen, M. (1992) *Crop Husbandry Regimes*. Sheffield Archaeological Monographs 3.
- Williams, D. (1973) Flotation at Siraf in *Antiquity*, **47**, 198-202

Appendix A

CONTEXT AND FINDS CATALOGUES

Pig Hill

Context	Trench	Description	Same as	bone	burnt clay	CBM	Clay pipe	Cu alloy	fe	fired clay	flint	glass	ind waste	pottery	sample
700		topsoil				1					7	1		1	
701	23	natural													
702	23	furrow cut													
703	23	fill of 702													
704	23	furrow cut													
705	23	fill of 704											3	1	
706	23	furrow cut													
707	23	fill of 706						1			1		1	2	
708	23	ditch cut	710												
709	23	fill of 708	711								1		7	3	3
710	23	ditch cut	708												
711	23	fill of 710	709	4									1	1	4
712	23	ditch cut													
713	23	fill of 712			1										4
714		void													
715		void													
716	21	curvilinear cut	928, 834												
717	21	fill of 716	833, 926											1	3
718	21	ditch cut													
719	21	fill of 718													
720	21	furrow cut													
721	21	fill of 720									2			3	
722	21	?linear cut													
723	21	fill of 722													
724	21	ditch cut													
725	21	fill of 724													
726	21	fill of 718													
727	26	furrow cut													
728	26	fill of 727													
729	26	furrow cut													
730	26	fill of 729													
731	26	furrow cut													
732	26	fill of 731													
733	26	?linear cut													
734	26	fill of 733													
735	26	double gully cut													
736	26	fill of 735					2		2		1	4		15	
737	26	?linear cut													
738	26	fill of 737					1								
739	26	?field boundary cut													
740	26	fill of 739												1	
741	26	natural clay													
742	26	layer ?natural under 739													
743	26	layer, modern													
744		fill of 745												22	4
745		ditch cut													
746		depression cut													

Cowpen Bewley to Warden Law Gas Pipeline, County Durham: Post-excavation assessment report

Context	Trench	Description	Same as	bone	burnt clay	CBM	Clay pipe	Cu alloy	fe	fired clay	flint	glass	ind waste	pottery	sample
747		ditch cut													
748		void													
749		ditch cut													
750		fill of 749													
751		ditch cut													
752		fill of 751		3											3
753		ditch cut													
754		fill of 753													1
755		furrow cut													
756		fill of 755									1		1	6	
757		ditch cut													
758		fill of 757													3
759		ditch cut													
760		fill of 759													3
761		fill of 759													
762		ditch cut													
763		fill of 762													4
764		ditch cut	766, 823, 1050												
765		fill of 764	767, 822												
766		ditch cut	764, 823, 1050												
767		fill of 766	765, 822												3
768		Stakeholes													
769		subsoil (B horizon)											1		
770		fill of 772													3
771		fill of 772													2
772		ditch cut													
773		fill of 746									1			5	
774		fill of 746													
775		posthole cut													
776		fill of 775													
777		ditch cut	840												
778		fill of 777	841												4
779		furrow cut													
780		fill of 779												1	
781		ditch cut													
782		fill of 781													
783		pit cut													
784		fill of 783													
785		fill of 783													
786		ditch cut	816												
787		fill of 786	817												3
788		ditch cut	832, 837												
789		fill of 788	831 836											2	
790		?stakehole fill													
791		fill of 792	818, 798												3
792		ditch cut	819, 797												
793		ditch cut	809												
794		fill of 793													3
795		ditch cut													
796		fill of 795													
797		ditch cut	819, 792												
798		fill of 797	791, 818												3
799		posthole cut													

Cowpen Bewley to Warden Law Gas Pipeline, County Durham: Post-excavation assessment report

Context	Trench	Description	Same as	bone	burnt clay	CBM	Clay pipe	Cu alloy	fe	fired clay	flint	glass	ind waste	pottery	sample
800		fill of 799													
801		posthole cut													
802		fill of 801													
803		ditch cut	820												
804		fill of 803	821												3
805		gully cut													
806		fill of 805													
807		gully cut													
808		fill of 807													
809		ditch cut	793												
810		fill of 809	794												
811		fill of 809	864												
812		ditch cut													
813		fill of 812												1	
814		ditch cut	772												
815		fill of 814	835		4					4				2	1
816		ditch cut	786												
817		fill of 816	787												
818		fill of 819	791, 798												
819		ditch cut	797, 792												
820		ditch cut	803												
821		fill of 820	804												
822		fill of 823	826, 765, 767											2	
823		ditch cut	764, 766, 1050												
824		gully cut													
825		fill of 824													
826		fill of 823	822												
827		fill of 827	763												
828		ditch cut	762												
829		?pit cut													
830		fill of 829													3
831		fill of 832	836, 789												
832		ditch cut	837, 788												
833		fill of 834	926, 717												
834		ditch cut	716, 928												
835		fill of 816	815												
836		fill of 837	831, 789												
837		slot cut	832, 788												
838		ditch cut													
839		fill of 838													
840		ditch cut	777												
841		fill of 840	778												
842		ditch cut													
843		fill of 842													
844		fill of 845													
845		gully cut													
846		gully cut													
847		fill of 846													
848		posthole cut													
849		fill of 848												1	
850		fill of 762													
851		fill of 943													
852		void													

Cowpen Bewley to Warden Law Gas Pipeline, County Durham: Post-excavation assessment report

Context	Trench	Description	Same as	bone	burnt clay	CBM	Clay pipe	Cu alloy	fe	fired clay	flint	glass	ind waste	pottery	sample
853		fill of 854													3
854		gully cut													
855		void													
856		void													
857		gully cut													
858		fill of 857													
859		ditch cut	883												
860		fill of 859													
861		fill of 859	884												
862		fill of 863													
863		gully cut													
864		fill of 793	811												
865		void													
866		ditch cut													
867		gully cut													
868		fill of 867													
869		posthole cut													
870		fill of 869													
871		posthole cut													
872		fill of 871													
873		fill of 874													3
874		pit cut													
875		void													
876		fill of 866	877												
877		fill of 866	876												
878		fill of 866													
879		fill of 880											2	4	3
880		ditch cut													
881		posthole cut													
882		fill of 881													
883		ditch cut	859												
884		fill of 883	861												
885		posthole cut													
886		fill of 885													1
887		fill of 892													1
888		fill of 889													3
889		pit cut													
890		fill of 795													
891		fill of 892													1
892		ditch cut													
893		?stakehole cut													
894		?pit cut													
895		fill of 894													
896		?pit cut													
897		fill of 896													
898		gully cut													
899		fill of 899													
900		void													
901		void													
902		gully cut													
903		fill of 902													
904		gully cut													
905		fill of 904									1				2
906		curvi-linear cut													

Cowpen Bewley to Warden Law Gas Pipeline, County Durham: Post-excavation assessment report

Context	Trench	Description	Same as	bone	burnt clay	CBM	Clay pipe	Cu alloy	fe	fired clay	flint	glass	ind waste	pottery	sample
907		fill of 906									1			15	3
908		fill of 909													
909		posthole cut													
910		fill of 911													
911		posthole cut													
912		fill of 913													
913		posthole cut													
914		fill of 915													
915		posthole cut													
916		fill of 793													
917		fill of 918													
918		stakehole cut													
919		fill of 920													
920		stakehole cut													
921		fill of 922													
922		posthole cut													
923		fill of 924													
924		posthole cut													
925		void													
926		fill of 928	833, 717												
927		fill of 928													
928		gully cut	716, 834												
929		fill of 930													
930		posthole cut													
931		fill of 932													
932		posthole cut													
933		void													
934		gully cut	943												
935		fill of 934	944												4
936		fill of 937													1
937		posthole cut													
938		fill of 777													
939		posthole cut													
940		fill of 939													
941		stakehole cut													
942		fill of 941													1
943		ditch cut	934												
944		fill of 943	935											57	1
945		fill of 950	973												
946		posthole cut													
947		fill of 946													2
948		posthole cut													
949		fill of 948									1				
950		curvi-linear cut													
951		fill of 950													
952		posthole cut													
953		fill of 952													1
954		posthole cut													
955		fill of 954													
956		fill of 957												1	4
957		ditch cut													
958		group no for postholes 885,1042,1045,1047													
959		void													

Cowpen Bewley to Warden Law Gas Pipeline, County Durham: Post-excavation assessment report

Context	Trench	Description	Same as	bone	burnt clay	CBM	Clay pipe	Cu alloy	fe	fired clay	flint	glass	ind waste	pottery	sample
960		void													
961		fill of 962													2
962		pit cut													
963		pit cut													
964		fill of 963													
965		curvi-linear cut													
966		fill of 965													3
967		plough scarring													
968		posthole cut													
969		fill of 968													1
970		posthole cut													
971		fill of 970													1
972		group no for postholes 952,968,970 and 1061													
973		fill of 950	945												3
974		fill of 965	966												
975		pit cut													
976		fill of 975													1
977		pit cut													
978		fill of 977													1
979		tree bowl cut													
980		fill of 979													
981		pit cut													
982		fill of 981													15
983		fill of 906													
984		void													
985		void													
986		fill of 987													
987		posthole cut													
988		pit cut													
989		fill of 988		1											1
990		pit cut													
991		fill of 990													5
992		fill of 1039													2
993		fill of 1039													1
994		fill of 995													
995		stakehole cut													
996		fill of 997													
997		stakehole cut													
998		fill of 999													
999		stakehole cut													
1000		fill of 1001													
1001		stakehole cut													
1002		fill of 1003													
1003		stakehole cut													
1004		fill of 1005													
1005		stakehole cut													
1006		fill of 1007													
1007		stakehole cut													
1008		fill of 1009													
1009		stakehole cut													
1010		fill of 1011													
1011		stakehole cut													
1012		fill of 1013													

Cowpen Bewley to Warden Law Gas Pipeline, County Durham: Post-excavation assessment report

Context	Trench	Description	Same as	bone	burnt clay	CBM	Clay pipe	Cu alloy	fe	fired clay	flint	glass	ind waste	pottery	sample
1013		stakehole cut													
1014		fill of 1015													
1015		stakehole cut													
1016		fill of 1017													
1017		stakehole cut													
1018		fill of 1019													
1019		posthole cut													
1020		fill of 1021													
1021		posthole cut													
1022		fill of 1023													
1023		posthole cut													
1024		fill of 1025													
1025		posthole cut													
1026		fill of 1027													
1027		posthole cut													
1028		fill of 1029													
1029		posthole cut													
1030		fill of 1031													
1031		stakehole cut													
1032		fill of 1033													
1033		stakehole cut													
1034		ditch cut													
1035		fill of 1034													4
1036		slot cut													
1037		fill of 1036													
1038		fill of 1039													3
1039		pit cut													
1040		posthole cut													
1041		fill of 1041													1
1042		posthole cut													
1043		fill of 1042													1
1044		fill of 965													3
1045		posthole cut													
1046		fill of 1045													1
1047		posthole cut (possibly roots)													
1048		fill of 1047													
1049		layer, re-deposited natural													
1050		ditch cut													
1051		fill of 1050													3
1052		fill of 1050													3
1053		ditch cut													
1054		fill of 1053													
1055		fill of 1053													
1056		posthole cut													
1057		fill of 1056													
1058		posthole cut													
1059		fill of 1058													
1060		fill of 1034													
1061		posthole cut													
1062		fill of 1061													
1063		fill of 934													4
1064		fill of 934													

Cowpen Bewley to Warden Law Gas Pipeline, County Durham: Post-excavation assessment report

Context	Trench	Description	Same as	bone	burnt clay	CBM	Clay pipe	Cu alloy	fe	fired clay	flint	glass	ind waste	pottery	sample
1065		fill of 1061													
1066		pit cut													
1067		fill of 1066													3
1068		gully cut													
1069		fill of 1068													3
1070		fill of 1071											1	5	3
1071		gully cut													
1072		pit cut													
1073		fill of 1072													
1074		fill of 981													
1075		fill of 981													
1076		fill of 981													
1077		fill of 981													
1078		fill of 981													
1079		stakehole cut													
1080		fill of 1079													
1081		metal find 'bridle'							1						
1082		gully cut													
1083		fill of 1082											3	3	3
1084		gully cut													
1085		fill of 1084												1	3
1086		ditch cut													
1087		fill of 1086									1				3
1088		gully cut													
1089		fill of 1088													
1090		fill of 1094	1095												3
1091		posthole cut													
1092		fill of 1091													
1093		posthole cut													
1094		gully cut													
1095		fill of 1094													
1096		fill of 1093													1
1097		fill of 1098													
1098		stakehole cut													
1099		fill of 1086													1
1100		ditch cut													
1101		fill of 1105								2				1	2
1102		fill of 1100									1		2	4	4
1103		posthole cut													
1104		fill of 1103													
1105		ditch cut													
1106		fill of 747													
1107		fill of 747													
1108		fill of 747													
1109		stakehole cut													
1110		fill of 1109													
1111		fill of 747													
1112		fill of 747 (post pipe)													
1113		fill of 1114													
1114		stakehole cut													
1115		fill of 1086													
1116		fill of 1117													3
1117		ditch cut													
1118		pit cut													

Cowpen Bewley to Warden Law Gas Pipeline, County Durham: Post-excavation assessment report

Context	Trench	Description	Same as	bone	burnt clay	CBM	Clay pipe	Cu alloy	fe	fired clay	flint	glass	ind waste	pottery	sample
1119		fill of 1118													
1120		ditch cut	759												
1121		fill of 1120	760								2				
1122		fill of 1120	761											1	
1123		fill of 1124													
1124		stakehole cut													
1125		fill of 1126													
1126		stakehole cut													
1127		fill of 1128													
1128		stakehole cut													
1129		fill of 747													3
1130		fill of 747													
1131		fill of 747													
1132		fill of 747													3
1133		fill of 747													
1134		?posthole cut													
1135		fill of 1134													
1136		stakehole cut													
1137		fill of 1136													
1138		void													
1139		fill of 747													
1140		fill of 747													
1141		fill of 747													
1142		stakehole cut													
1143		fill of 1142													
1144		stakehole cut													
1145		fill of 1144													
1146		stakehole cut													
1147		fill of 1146													
1148		stakehole cut													
1149		fill of 1148													
1150		stakehole cut													
1151		fill of 1150													
1152		pit cut													
1153		fill of 1152													3
1154		fill of 1155													3
1155		gully cut													
1156		fill of 1155													
1157		layer, buried soil													3
1158		fill of 1159													
1159		stakehole cut													
1160		fill of 1161													
1161		stakehole cut													
1162		fill of 1163													
1163		stakehole cut													
1164		fill of 1165													
1165		stakehole cut													
1166		fill of 1167													
1167		stakehole cut													
1168		fill of 1100													
1169		fill of 1170													
1170		posthole cut													
1171		fill of 747													
1172		fill of 747													

Cowpen Bewley to Warden Law Gas Pipeline, County Durham: Post-excavation assessment report

Context	Trench	Description	Same as	bone	burnt clay	CBM	Clay pipe	Cu alloy	fe	fired clay	flint	glass	ind waste	pottery	sample
1173		fill of 1174													
1174		stakehole cut													
1175		fill of 1176													
1176		stakehole cut													
1177		ditch cut													
1178		fill of 1177													1
1179		fill of 747													
1180		fill of 1182													2
1181		fill of 1182													1
1182		pit cut													
1183		fill of 1184													
1184		stakehole cut													
1185		fill of 1186													
1186		stakehole cut													
1187		fill of 1187													
1188		stakehole cut													
1189		fill of 1190													
1190		stakehole cut													
1191		fill of 1192													
1192		stakehole cut													
			Total	8	5	1	3	1	3	6	21	5	22	162	207

Harehill Moor

Context	Description	bone	ind waste	pot	sample	stone
2000	topsoil					
2001	natural clay					
2002	curvi-linear ditch cut (same as 2006)					
2003	upper fill of 2002 same as 2007,2061,2063,2062,2083,2107			4	4	
2004	curvi-linear ditch cut (possibly same phase as 2054)					
2005	fill of 2004				3	
2006	curvi-linear ditch cut (same as 2002)					
2007	fill of 2006 same as 2003,2061,2063,2062,2083,2107				3	
2008	ditch cut					
2009	fill of 2008					
2010	gully cut					
2011	fill of 2010					
2012	curvi-linear ditch cut					
2013	primary fill of 2012				3	
2014	secondary fill of 2012				3	
2015	curvi-linear ditch cut					
2016	fill of 2015				2	
2017	curvi-linear ditch cut					
2018	fill of 2017				3	
2019	void					
2020	curvi-linear ditch cut					
2021	primary fill of 2020					
2022	secondary fill of 2020					
2023	posthole cut					
2024	fill of 2023					
2025	stakehole cut					
2026	fill of 2025					
2027	stakehole cut					
2028	fill of 2027					
2029	stakehole cut					
2030	fill of 2029					
2031	stakehole cut					
2032	fill of 2031					
2033	stakehole cut					
2034	fill of 2033					
2035	stakehole cut					
2036	fill of 2035					
2037	slot cut					
2038	fill of 2037					
2039	mid-fill of 2004					
2040	primary fill of 2004			3		
2041	posthole cut					
2042	fill of 2041				2	
2043	posthole cut					
2044	fill of 2043				1	
2045	posthole cut					
2046	fill of 2045					
2047	pit cut					
2048	fill of 2047				3	
2049	curvi-linear ditch cut					

Context	Description	bone	ind waste	pot	sample	stone
2050	curvi-linear ditch cut (re-cut of 2117)					
2051	gully cut					
2052	fill of 2051					
2053	primary fill of 2006 same as 2076			2	3	
2054	curvi-linear ditch cut					
2055	upper fill of 2054					
2056	primary fill of 2057			1	3	
2057	curvi-linear ditch cut (re-cut of 2050)					
2058	fill of 2057	3	1	1	1	1
2059	fill of 2002			1		
2060	fill of 2002					
2061	lens within 2003 (same as 2003,2007,2063,2062,2083,2107)					
2062	lens within 2003 (same as 2003,2007,2063,2061,2083,2107)					
2063	fill of 2054					
2064	fill of 2054					
2065	primary fill of 2054					
2066	fill of 2002					
2067	fill of 2002					
2068	fill of 2002				3	
2069	fill of 2002				1	
2070	fill of 2002					
2071	fill of 2002					
2072	fill of 2054					
2073	gully cut					
2074	fill of 2073					
2075	fill of 2004				3	
2076	fill of 2006 same as 2053				3	
2077	fill of 2050 same as 2104					
2078	fill of 2050					
2079	fill of 2117 same as 2103					
2080	fill of 2050				3	
2081	fill of 2050					
2082	fill of 2090 (same as 2115)			1	3	
2083	lens within 2003 (same as 2003,2007,2063,2062,2061,2107)					
2084	fill of 2002					
2085	fill of 2054					
2086	posthole cut					
2087	fill of 2086					
2088	fill of 2089					
2089	posthole cut					
2090	curvi-linear ditch cut (re-cut of 2049) same as 2112					
2091	fill of 2092					
2092	curvi-linear ditch cut (re-cut of 2049) same as 2096 and 2110					
2093	fill of 2049 (same as 2099)				3	
2094	fill of 2090 ?disturbance					
2095	fill of 2096 (same as 2100,2111,2101)					
2096	curvi-linear ditch cut (re-cut of 2049) same as 2092 and 2110					
2097	fill of 2049 (same as 2108)				1	
2098	fill of 2049					
2099	fill of 2049 (same as 2093)					
2100	fill of 2096 (same as 2101,2095,2111)					

Context	Description	bone	ind waste	pot	sample	stone
2101	fill of 2096 (same as 2100,2095,2111)					
2102	fill of 2057					
2103	fill of 2117 same as 2079					
2104	fill of 2050 same as 2077					
2105	fill of 2050					
2106	fill of 2002				3	2
2107	fill of 2002 (same as 2003,2007,2063,2062,2083,2061)			5	3	
2108	fill of 2049 (same as 2097)					
2109	fill of 2049					
2110	curvi-linear ditch cut (re-cut of 2049) same as 2096 and 2092					
2111	fill of 2110 (same as 2100,2095,2101)					
2112	curvi-linear ditch cut (re-cut of 2110) same as 2090					
2113	fill of 2112					
2114	fill of 2112					
2115	fill of 2112 (same as 2082)			1		
2116	fill of 2015					
2117	curvi-linear ditch cut					
	Total	3	1	19	60	3

Appendix B

POTTERY

Blaise Vyner

1.0 INTRODUCTION

Assessment has been undertaken in order to obtain preliminary information on the chronology and nature of the pottery assemblage, and the range of pottery fabrics present, and to provide information on the extent and nature of any further required examination of the material.

2.0 SUMMARY

Assemblage quantities in terms of the regional ceramic sequence: very small, 1-10 sherds; small, 11-25 sherds; medium-sized, 25-100 sherds.

The assemblage collected during monitoring comprised a medium-sized assemblage of medieval pottery, with a few later pieces which included a curious item, the lower leg and foot of a terracotta human figure.

Pottery collected during the excavation at Harehill Moor comprised a small assemblage of pre-Roman Iron Age style pottery which included a limited range of vessels and fabrics.

Pottery collected during the excavation at Pig Hill comprised a medium-sized assemblage of pre-Roman Iron Age pottery with a very small element of medieval and post-medieval material which is of little interest.

3.0 CHRONOLOGY

The medieval elements of these pottery assemblages appear to belong to the 13th and 14th centuries, with only a very small quantity of relatively recent material and little or no post-medieval ceramics. The pre-Roman Iron Age assemblages all appear to pre-date the Roman period on the basis of the absence of any Roman material.

4.0 EXTENT OF THE ASSEMBLAGE

All of the pre-Roman Iron Age assemblages are worthy of further analysis because of the paucity of such material from south-east Durham. While useful comparison may be made with the substantial excavated assemblage from Thorpe Thewles, there are few other comparative assemblages from the east coast area north of the River Tees, although material recently excavated from Catcote may be of relevance once the report is available. The total minimum number of pre-Roman Iron Age vessels present may be in the order of 20.

The medieval pottery is of less value because of the small amount present and the absence of detailed structural information to support chronological analysis: it is suggested that the medieval pottery collected during monitoring be examined and reported upon in detail, while the remaining material is only briefly identified and reported upon.

5.0 NATURE OF THE ASSEMBLAGES

Pre-Roman Iron Age pottery: The range of vessel forms is largely limited to barrel-shaped jars ranging in size from small to large. No crucibles or briquetage pieces were apparent during assessment.

Salt ceramics.

Medieval and later pottery: There appears to be a fairly evenly balanced representation of glazed and plainwares. The material mostly comprises medieval pottery from local sources, with few obvious imported pieces.

6.0 RANGE OF VESSEL FABRICS

Pre-Roman Iron Age pottery: The fabrics appear to be dominated by types with igneous grits, with only a limited amount of quartz tempering present and no obvious calcite gritting.

Medieval pottery: Much of the material is Tees Valley Ware, although there are some plain and glazed sherds which may derive from south-east Durham, as well as a few pieces which originate in North Yorkshire.

7.0 ACCRETIONS

Carbonised accretions are present on four pre-Roman Iron Age sherds from Pig Hill. Analysis of these residues may not be worthwhile in the context of the individual site analysis, but there may be potential for radiocarbon dating.

8.0 ILLUSTRATION

Five sherds of pre-Roman Iron Age pottery have been identified as worthy of illustration. Detailed analysis of the assemblage may increase this drawing requirement by two or three pieces. One or two medieval sherds may also merit drawing.

9.0 CONSERVATION

Most of the pottery is robust and there is no obvious requirement for conservation.

10.0 FURTHER ANALYSIS

The pre-Roman Iron Age elements of the assemblages have the potential to contribute usefully to the further understanding of the sites and their regional context. This material should be examined and analysed leading to production of a report/s containing:

- The detail of pre-Roman Iron Age pottery fabrics identified, with quantification tabulated by context, together with relative proportions of each fabric (by weight to nearest 5g).
- A brief review of the pottery in the regional context.
- Note of any contribution from the ceramic assemblage to the interpretation of site status and function.

The medieval element of the assemblage collected during monitoring should be examined and reported upon to detail:

- The range and approximate proportions of pottery present
- Any contribution to the understanding of site function, chronology and status.

The provenance and chronology of other medieval and more recent pottery should be briefly noted and not subject to further discussion.

Appendix C

FLINT

P. Makey

1.0 MONITORING

1.1 Introduction (For fuller descriptions see archive catalogue.)

The assemblages collected during monitoring comprised 5 pieces of struck flint (24.5g) from 4 separate pipeline / field, sections.

The material consists of 2 flakes, 1 core, 1 core rejuvenation flake and a retouched secondary guide flake.

The material is not a homogenous collection.

The material is probably of Neolithic and early Bronze Age date.

Curation of flint cores and high quality knapping is evident.

Raw material was used sparingly.

Raw material was probably obtained from local sources.

1.2 The individual sites

Field 0/1 (NZ 476 253) Immediately north of Cowpen Bewley

Only 1 piece of worked flint was recovered, this was a highly damaged; residual flint core. A single stray core is of little significance, although since cores are the basic prepared blanks used for the manufacture of prehistoric flint blades, flakes and tools they indicative of knapping activities in the area. Though of no clear typological form the general size of the core and the nature of its flake removals is consistent with a later Neolithic / early Bronze Age date.

Catalogue: (see record 1, archive illustration)

1) Core: 2 platformed flake and bladelet core of non-typological form.

The piece exhibits traces of 7 small removals, is exhausted and has been rejuvenated (i.e. reworked). The piece is in a residual state and has been subjected to heavy post-depositional damage. The core was manufactured on a pebble of light olive grey coloured flint and weighed 7.7g.

Date: later Neolithic / early Bronze Age.

Field 1/8 (NZ 476 268) South of A689

Two flakes (6.6g) were recovered. One of these was a fresh-looking thinning flake from later stages of core reduction. The other example was fragmentary but broad. These examples are probably of early to middle Neolithic or early Bronze Age date (i.e. they are not of later Neolithic character).

Catalogue:

1) Flake (Tertiary): Reddish brown till / gravel flint, 0.6g

2) Flake / Broken (Secondary or Tertiary): Olive grey till flint, 6.0g.

Field 2/5 (NZ 463 281) 250m east of Low Burntoft Farm

The sole flint from this area of the pipeline easement was a core rejuvenation flake. The flake was a plunging example that had been struck down the face of a core to remove a surface

irregularity. The parent core was probably a flake variety that possessed at least 3 platforms. The date of the piece is probably later Neolithic / early Bronze Age.

Catalogue:

1) Core Rejuvenation Flake (Tertiary): light reddish brown, till / gravel flint, 6.0g.
A plunging flake struck down the core face.

Field 8/9 (NZ 381 411) Harehill Moor

A very fresh guide blade, the piece possesses 2 small areas of intentional retouch plus both macroscopic and microscopic traces of edge use. The piece was probably used as an un-retouched flake knife. Flake scars evident on the right hand side of the piece are consistent with a restricted range of Neolithic flint industries.

Catalogue: (see record 5, archive illustration)

1) Miscellaneously Retouched Secondary Guide Blade (2 Areas of Retouch):
Tertiary flake of light brown till / gravel flint, 4.2g.

1.3 Potential

The flint collected during monitoring is of limited further potential, although the guide flake from field 8/9 may indicate the presence of an early to middle Neolithic settlement.

2.0 HAREHILL MOOR (NZ 3810 4116)

2.1 Introduction (For fuller descriptions see archive catalogue.)

The assemblage recovered during excavations at Harehill Moor comprised only 1 piece of struck flint (9.2g), a double side and end scraper. Almost of 'thumbnail' form the scraper has received steep (85°) convex, scalar flaking. The scraper has been subjected to very heavy post-depositional damage and has also been heavily burnt. The burning is probably recent rather than prehistoric. There are heavy macroscopic traces of edge use. The implement was manufactured on till flint and has a very fine dihedral flaking on the butt /platform.

2.2 Date

The implement is a diagnostic type that tends to be restricted to 'Beaker' assemblages.

2.3 Catalogue: (see record 1, archive illustration)

1) Scraper / Broken: Double side and end. Olive grey till flint, 9.2g. Context 2000, Topsoil.

2.4 Potential

Despite the heavy damage the scraper is finely worked. A single scraper is of limited potential but the quality of the piece's knapping (despite the damage) is unusually high.

3.0 PIG HILL (NZ 3718 4436)

3.1 Summary and quantification (For fuller descriptions see archive catalogue.)

The assemblages recovered during excavations at Pig Hill comprised 21 pieces of struck flint (130g) from 13 separate contexts.

The flint type and incidence is given in table 2.

The material probably contains discreet elements of Neolithic and early Bronze Age date.
A restricted typological range of flint is present.
Traces of micro-wear are present on some of the un-retouched flakes.
Raw material was probably obtained from local sources.
The flint has probably only recently been dispersed.
The assemblage contains material of a domestic nature.

3.2 State

The material from Pig Hill tends to be in a reasonably fresh state, even pieces from topsoil, with the exception of pieces from double gully 735 (flake), posthole 948 (core rejuvenation flake), ditch 708 (flake) and ditch 1086 (broken flake). The pieces from these contexts have been subjected to some form of recent edge attrition that is probably consistent with plough damage. The core rejuvenation flake from posthole 948 is also lightly burnt. The burning is consistent with sooting from modern agricultural practices such as stubble burning. The flakes from ditches 708, 1086 and the core rejuvenation flake from posthole 948 also possess a dense white patina that is not present on the remaining material.

Six of the pieces (28.5%) have been subjected to breakage. Only 2 of the broken pieces came from topsoil contexts. The general state of the material from the furrows is better than might be expected. This material is consistent with sealed flint assemblages that have only just started to be dispersed.

3.3 Reduction sequence and raw material technology

Consideration of the knapping of the material can only be generalised since the assemblage is small and probably of more than 1 period.

Where reduction sequence can be discerned pieces from tertiary (final) stages constitute roughly 33% (7 pieces) of the material, whereas secondary reduction comprises 24% (5 pieces). An unclassifiable flake scraper from curvilinear 906 possesses a thick cortication consistent with primary (initial) stages of flint reduction. The ratios are consistent with flint assemblages from an area near / or on the periphery of a domestic Neolithic or Bronze Age settlement.

There is a high ratio of scrapers to other struck flints, roughly 1:5. Many implement types are missing, as are small spalls, chunks and trimmings that are normally associated with knapping. However furrow 706 produced a small flake that is probably a tool trimming. A notable feature of the assemblage is the complete absence of blades and bladelets. Knapping appears to have been by hard hammer but was geared to the production of high quality relatively broad flakes.

The raw material employed was predominately of olive grey (c70%) till flint. The remaining raw material is of light brown and reddish brown flint that was probably locally derived from small gravel pebbles. There are no particular biases in the selection of specific raw material for the production of different implement types. However the range of retouched and un-retouched pieces is limited. There may be a slight period based selectivity. Lithics of 'Beaker' / Bronze Age character show a slight preference for light brown and reddish brown flint.

3.4 Use wear

Evidence of edge use is present on 6 of the pieces (28.5%), 3 of which are scrapers. The edge use on the scrapers is moderate to heavy. A flake from depression 746 possesses slight traces of surface polish. The nature of this is unclear, although it resembles that from a polished scraper.

Micro-wear is present on 4 of the pieces, these are the 2 flakes and end scraper from topsoil and an extended end / side scraper from furrow 755. The 2 flakes possess heavy micro wear that is

consistent with their having been used to whittle fresh wood or possible slight use for reaping of crops.

The observable use and micro-wear would appear to be predominately on pieces of Neolithic character.

3.5 Chronology

The assemblage appears to contain discreet elements of Neolithic, Beaker and non-Beaker Bronze Age material.

The possible Neolithic material is of a character consistent with flint working that is usually found in association Grimston and / or Peterborough Wares.

The Bronze Age material contains clearly Beaker elements but also material consistent with food-vessel urns. The assemblage contains a particularly fine extended end and side (left) scraper (archive record 13, context 756, furrow 755). A strikingly similar example was recovered by Canon Greenwell; from Copt Hill Barrow, Durham (unnumbered, UN3, Figure 5; Kinnes and Longworth 1985).

3.6 The regional significance of the assemblage

Other than barrow material little is known of the region's Neolithic and Bronze Age lithic assemblages. The transition from Neolithic to Bronze flint working technology needs further study. This assemblage does not aid the picture but does serve to illustrate the need for further fieldwork.

3.7 The archaeological potential of the flint assemblage

The fresh state of the micro-wear and the possibility of earlier secondary Neolithic flint assemblages is important. There are probably sealed or recently disturbed flint assemblages nearby. Should further Bronze Age material be discovered they might prove useful in distinguishing between the characteristics of Beaker versus food vessel assemblages.

The flint assemblage cannot be directly associated with the features. If there is a relationship the focus of the lithic activity would appear to be in the area of ditches 1100, 1120 and depression 746. However the possibility that some of the features containing flints date to the Bronze Age has not been ruled out.

3.8 The illustration flint

There are 6 candidates for illustration, these include 3 scrapers, (records 5, 11, 13, contexts 700, 721, 756) 74, 266: squares 31, 78 context 200) a tool trimming (record 8, context 707), a polished flake (record 14, context 773) and a flaked flake (record 18, context 1087).

Table 2. Pig Hill: Composition of the Flint Assemblage.

Flint ID	Total Number	Number Broken	CONTEXT TYPES				
			Topsoil U/S	Ditches	Furrows	Post Holes	Other
DEBITAGE							
Flakes	11	4	4	3	2	-	2
Chippings	1	-	-	1	-	-	-
Cores:- Unclassifiable	1	1	-	1	-	-	-
Core Rejuvenation Flakes	1	-	-	-	-	1	-
UTILISED							
Polished Flake	1	-	-	-	-	-	1
RETOUCHED							
Indeterminate	1	1	1	-	-	-	-
Scrapers:- End	1	-	1	-	-	-	-
Extended End	1	-	-	-	1	-	-
Side & End	2	-	1	-	1	-	-
Unclassifiable	1	-	-	-	-	-	1
<i>Total = 21</i>		6	7	5	4	1	4

Appendix D

METALWORKING DEBRIS

Jane Cowgill

Catalogue of the Industrial Material from Pig Hill, Cowpen Bewley

Context	Sample	Type	Count	Weight	Comments
705		CLINKER	1	2g	Partially burnt coal.
707		CLINKER	1	5g	Partially burnt coal.
709	AA	SLAG	2	1g	Cindery.
709		FIRE CLAY	1	18g	Orange oxidized interior; reduced fired and partially slagged rounded exterior.
709		HB	1	75g	Charcoal fuel; small and rounded example with copper-alloy droplets; abraded.
709		FECINDER	1	2g	
709		CLINKER	1	2g	Partially burnt coal.
709		CHARCOAL	3	5g	Concreted - discard.
711		SLAG	1	4g	Coal fuel; smithing slag lump? but glassy.
713	AA	SLAG	1	1g	
744	AB	SLAG	1	1g	
752	AA	CLINKER	1	1g	Partially burnt coal.
756		CLINKER	1	2g	Partially burnt coal.
760	AA	SLAG	2	1g	
767	AA	CLINKER	1	<1g	Partially burnt coal.
769		COAL	1	1g	
830	AA	SLAG	3	11g	HB or smithing slag lump fragments; quite dense.
830	AA	CLINKER	9	5g	Partially burnt coal.
853	AA	CLINKER	1	1g	Partially burnt coal.
879		CONCRETION	2	12g	Natural - discard.
888	AA	SLAG	6	2g	Cinder.
905	AA	CLINKER	1	<1g	Partially burnt coal.
961	AA	SLAG	1	1g	Iron smithing by-product.
961	AA	CLINKER	3	1g	Partially burnt coal.
966	AA	CLINKER	1	<1g	Partially burnt coal.
976	AA	SLAG	1	<1g	
989	AA	SLAG	51	76g	Coal fuel; HB fragments? Iron smithing by-product.
992	AA	CLINKER	4	2g	Partially burnt coal.
1035	AA	CLINKER	2	<1g	Partially burnt coal.
1038	AA	CLINKER	1	1g	Partially burnt coal.
1041	AA	CLINKER	7	3g	Partially burnt coal.
1044	AA	CLINKER	4	1g	Partially burnt coal.
1052	AA	CLINKER	2	1g	Partially burnt coal.
1067	AA	CLINKER	2	<1g	Partially burnt coal.
1070	AA	SLAG	1	1g	Iron smithing by-product.
1070		CINDER	1	11g	Iron smithing by-product? Coal fuel; very light in colour and weight.
1083	AA	SLAG	1	2g	Iron smithing by-product; abraded?
1083	AA	CLINKER	2	1g	Partially burnt coal.
1083		CLINKER	3	5g	Partially burnt coal.
1087	AA	CLINKER	2	1g	Partially burnt coal.
1090	AA	CLINKER	1	1g	Partially burnt coal.
1101	AA	CLINKER	1	<1g	Partially burnt coal.
1102		CINDER	1	9g	Iron smithing by-product? Coal fuel.
1102		CONCRETION	1	3g	Natural - discard.
1129	AA	CLINKER	8	1g	Partially burnt coal.

FECINDER=Cinder; a by-product of iron smithing. HB=Plano-convex slag accumulation (commonly known as hearth bottoms).

Appendix E

STONE

Elizabeth Wright

1.0 INTRODUCTION

Two fragments of worked stone were recovered during the excavation at Harehill Moor. They were both found within the primary fill of the roundhouse gully 2002 and were sent to Elizabeth Wright for analysis.

2.0 RESULTS

The first fragment (2106 AB) was part of the lower stone of a saddle quern in a brown / grey coarse, pebbly feldspathic millstone grit with much surface iron staining. The underside of the quern is convex, neatly rounded and much smoothed, probably as a result of friction or slight movement when in use. This was probably a part of a considerably larger quern, perhaps only representing about ¼ or less of the whole. The remaining grinding surface shows hollowing and smoothing from use. The original shape of the quern is difficult to project because of the extent of the damage, but what remains suggests that the stone was either selected with care or carefully dressed to shape. Overall measurements remaining 190 x 220 x 90 mm high.

The second piece (2106 AC) was a rounded and slightly pentangular shaped rubbing stone of grey fine to medium grained micaceous sandstone with flecks of limonite / goethite. The tool, probably a 'rubber' for a saddle quern, is of a size which fits very comfortably in one hand and was probably a well chosen suitable pebble. Only half of the tool remains, the side of the rubber which fitted in the hand which was polished from constant handling. The other face of the pebble is missing, having been broken to leave a rough surface, this was probably once the active grinding face.

Appendix F

**CONSERVATION ASSESSMENT AND X-RADIOGRAPHY OF MATERIAL
FROM PIG HILL**

Jennifer Jones

1.0 QUANTIFICATION AND CONDITION

Three items were received for X-radiography and conservation assessment – one copper alloy, and 2 iron. The Cu Alloy is quite lightly corroded with surface detail visible, the ironwork is heavily corroded, with both form and surface detail obscured. All the material was stable when received.

2.0 X-RADIOGRAPHY

The pieces were X-radiographed, and one XR plate was used.

3.0 RESULTS

The iron pieces both appear to be nails.

Surface decoration is faintly visible on the Cu Alloy strap end under X16 magnification, but is difficult to see on the XR. The densities of the strap end and the rivet which holds it appear different on the XR, suggesting different alloys, which could be determined by EDXRF analysis.

Appendix G

ENVIRONMENTAL REPORT

D. J. Rackham

1.0 INTRODUCTION

Excavations at Pig Hill and Harehill Moor, conducted by Northern Archaeological Associates along the route of a new gas pipeline recorded two Iron Age settlements. Samples and animal bone collected during these excavations were submitted to the Environmental Archaeology Consultancy for environmental assessment. The sites are presented and discussed individually below.

2.0 HAREHILL MOOR (NZ 3810 4116)

This site occupied 80 metres of the pipeline corridor and included roundhouse gullies, a ditch, pits, post and stakeholes. Samples were collected from a number of curvilinear ditches, linear ditches, postholes and a pit (Table 3). All the features are at present assumed to be of Iron Age date. A total of 22 samples were submitted for processing and assessment. In addition three unidentifiable fragments of burnt and calcined bone were recovered by hand from context 2058.

2.1 Methodology

The soil samples were processed in the following manner. Sample volume and weight was measured prior to processing. The samples were washed in a 'Siraf' tank (Williams 1973) using a flotation sieve with a 0.5mm mesh and an internal wet-sieve of 1mm mesh for the residue. Both residue and float were dried, and the residues subsequently re-floated to ensure the efficient recovery of charred material. The dry volume of the flots was measured, and the volume and weight of the residue recorded. A total of 514 litres of soil was processed in this way.

The residue was sorted by eye, and environmental and archaeological finds picked out, noted on the assessment sheet and bagged independently. A magnet was run through each residue in order to recover magnetised material such as hammer scale and prill and a count made of the number of flakes or spheroids of hammer scale collected. The residue was then discarded. The flot of each sample was studied under a low power binocular microscope. The presence of environmental finds (i.e. snails, charcoal, carbonised seeds, bones etc) was noted and their abundance and species diversity recorded on the assessment sheet. A count or estimate was made of the number of fragments of charred grain, chaff and individual weed seeds during the scanning.

2.2 Results

The sampled deposits were mainly sands, silts and silty clays with varying amounts of angular, sub-rounded and rounded stone. Coarse sediment over 1mm rarely comprised more than 9% of the sample. Pottery was recovered from five samples, fired earth was present in three, fuel ash slag in eight, burnt bone in one and a single flake of hammer scale in one (Table 3). This single flake cannot be used to imply smithing at the site and none of the slags can be classified as smithing slags. The bulk of the finds are associated with the complex of curvilinear ditches at the northern end of the site, ditches 2002, 2004 and 2006, and a small pit, 2047, just outside ring ditch 2002. A small amount of fire debris, including fuel ash slag

and a relatively large magnetic component, occurs in the postholes inside ring ditch 2012, although this is not accompanied by much charcoal. A large piece of stone in sample 2082 may have been used as some sort of grinding stone.

All the flots are heavily contaminated with fibrous rootlets, and many have several uncharred seeds of recent origin. In most of the samples this rootlet component far exceeds the charred component of the flot, but the flot volumes noted in Table 4 represent the estimates of the volume of the non-rootlet component. Despite this obvious contamination there is no reason to suppose that the charred component of the flots has been contaminated by more recent material. The charcoal and many charred seeds are partly mineralised and there is no marked variation in the condition of the charred plant remains that might imply later intrusive material. These remains are in fact fairly poorly preserved and a proportion only will be identifiable to taxa.

The flots show a similar concentration of material within the ring ditches at the northern end of the site. The bulk of the samples produced no more than a few charred weed seeds and a little charcoal (Table 4), with context 2082 producing a couple of charred grains, two pieces of chaff, grass seeds, a number of weed seeds, a hazelnut shell fragment and a charred tuber. Most of the richer samples derive from ditches 2002, 2004 and 2006 (Table 4). These have produced a few charred cereal grains, occasional chaff fragments and a few weed seeds. The richest sample derives from context 2068 and includes the largest charcoal component which includes small roundwood and twigs. Preliminary identification of the charred grains indicates the presence of barley, possible wheat and seeds of heath grass, *Danthonia decumbens*. Charred tubers, probably from grasses are also present in several samples.

Two sample flots, 2016 and 2018 included abundant uncharred seeds, numerous spores and frequent well preserved insect fragments. These occur in such abundance that they cannot be explained as contaminants, and the presence of caddis fly larval cases in 2016 and uncharred wood fragments in 2018 clearly indicates the survival of waterlogged material in these two samples. Both derive from the curvilinear ditch in the south-east part of the site, and considering the condition of material in the remainder of the samples this feature was either much deeper than the other sampled features or represents a much later, more recent ditch. The interim report records this ditch as a modern hedge line and the condition of the plant remains would accord with this.

The concentration of material in the series of ring ditches at the northern end of the site implies a greater amount of domestic rubbish entering these deposits than those elsewhere on the site, possibly related to the evidence that this structure was rebuilt on the same site and may have had a more extended period of occupation. Nevertheless densities of material across the whole site are fairly low with even the richest sample producing little more than 1 grain per litre of sample.

2.3 Recommendations

Two areas deserve further study. Problems with the dating of the site, and the very limited number of pottery sherds indicates that radiocarbon dating will be needed to place the site within an absolute chronology. Despite the heavy contamination by rootlets, the presence of recent seeds and fairly heavy mineralization of some of the charcoal and charred grains there is material in the samples suitable for radiocarbon dating. Several of the samples have produced fragments of charcoal large enough to identify and establish whether they are suitable for dating, and in two or three samples small roundwood and twigs indicate material that could be dated. Likewise the samples that have produced half a dozen charred cereal grains can also be dated. Two samples of charcoal were handpicked on site. Both are small pieces of roundwood and would be suitable for C14 dating. Unfortunately in most of these cases AMS dating will be required because of the small sample size of suitable material. Only

in a couple of samples is there enough material for a standard radiocarbon date and this would require the amalgamation of several charcoal fragments, not as yet identified as suitable (i.e. young wood rather than older heartwood).

The second area of work is the charred plant material. Although in low frequency in the deposits identification of the material already sorted from the samples will allow the recognition of the crops being utilised and grown, and perhaps some aspect of the soils and ecology of the arable fields although the latter will be severely limited by the relatively small number of charred weed seeds present in the samples. The presence of chaff and weed seeds in the assemblage implies some of the material may derive from crop processing but the samples are too small for any confident interpretation concerning the origin of the charred component in the samples. It is likely to be a mix of domestic and crop processing waste, both perhaps burnt on the fires within the roundhouses.

The waterlogged samples associated with the modern hedge line probably do not warrant any further work.

3.0 PIG HILL (NZ 3718 4436)

3.1 Introduction

The excavations on this section of the pipeline uncovered an extensive site of probable Iron Age date. Linear features, enclosures, roundhouses, gullies and pits were all sampled (Table 5) along the whole length of the site. A total of eighty seven samples were collected, fourteen of which were charcoal and C14 samples and the remainder soil samples. Although all the samples were located a few tubs could not be assigned due to the labels on the tubs fading and becoming illegible. The samples were processed in the manner described above for Harehill Moor and a total of 1482.5 litres of sample were processed. One sample, context 982, was sampled in 15 tubs, but for this assessment only 30 litres of this sample was processed. The remainder has been retained along with small quantities of the other samples that exceeded 30 litres in size and those tubs whose labels could not be deciphered. No phasing for the site was available for this assessment, largely due to the relative absence of pottery and the difficulty with its phasing, so no chronological perspective is available.

A small quantity of animal bone was recovered by hand from three contexts, 711, 752 and 989. In all three the bone is burnt and calcined. That in 752 and 989 is unidentifiable, while the four fragments in context 711 include a fragment of the distal shaft of a cow femur. This is the only identifiable bone from the site other than the pig tooth fragments from the samples.

3.2 Results

There is a low level of recent contamination in all the samples. This takes the form of small quantities of fibrous rootlets, occasional uncharred straw and chaff, uncharred seeds of plants such as *Chenopodium* (goosefoots/oraches), *Rubus* (bramble) and others, and occasional mites and insects, the latter often must have walked into the sample since many are complete although fragmented. This contamination is relatively low but rare finds of partially charred chaff that suggests recent stubble burning indicates that the charred material needs to be studied with care. The ancient charred material is relatively poorly preserved and this difference in preservation should be sufficient to isolate the limited modern material. One further difficulty for the plant remains is the level of mineralization in the soils. It is clear that a proportion of the plant seeds are mineralised, and in several taxa this has resulted in black brittle seeds that have the appearance of having been charred but may be of much more recent date than the archaeology of the site. Clear separation of the charred from mineralised material will require care by the archaeobotanist and may only be possible by breaking some

of the seeds, something which can only be done once the seed has been identified. Some of the abundance estimates in Table 6 below may therefore slightly over-estimate the number of charred seeds in the samples.

A range of archaeological finds have been recovered from the samples. Small sherds of pottery have been recovered from a number (17) of the samples (Table 5) and fired earth or clay from twelve. One or two of the latter may be abraded fragments of pot. Small chips of flint were found in several of the samples but many are probably natural flakes rather than artefactual. Three fragments of what appear to be modern glass were recovered from two samples. Animal bone was rare in the samples, but when found it is generally burnt and calcined although two samples produced unburnt fragments of tooth. In both of the latter cases fragments of pig tooth were recognisable from their enamel. One sample, 758, produced a fragment of gritstone. This material would be suitable for a quernstone, but with millstone grit deposits occurring naturally to the west of the site it may be part of the local stone assemblage. Context 969 produced a flattened stone with one surface heavily worn. This may have occurred naturally although the stone could have been utilised. Another unusual stone was picked out of the residues of several samples. This is a light porous pale grey or buff stone that did not respond to mild acid but scratches easily. In one sample, 1051, pieces join and appear to be faceted. The stone was shown to a local geologist who considered it not to be natural, but it does not appear to be a fired brick or clay. I would suggest it may be local magnesian limestone but this should be checked. The stone is soft and could easily be worked. Coal, another local stone, was present in almost all the samples either as a few grammes of larger fragments in the residue or in the flots. The presence of clinker and partially burnt and 'molten' coal in the flots indicates that the coal was burnt but whether this was as a fuel or incidentally because of its natural occurrence in the soils on the site, or because it was a product of recent contamination is unknown. In no samples was it particularly abundant and most of the clinker fragments that were hand-picked on site are small enough to have moved down through the soil. In several of the small flots the coal and cinder component was equal to or larger than the charcoal component, but in all the larger flots charcoal was much more abundant.

One slightly more frequent element of the finds assemblages is the evidence for iron smithing. Although nowhere very abundant, flakes of hammerscale, prill (small fragments of magnetic slag, often with the dull or shiny grey characteristic of hammerscale) and pieces of slag occur across the site. Prill is almost ubiquitous in the magnetic fraction from the samples, but rarely occurs above two or three small fragments. A small hearth bottom recovered by hand from context 709 (see Cowgill below), fragments of iron smithing slags from the samples and the presence of hammerscale and magnetic prill testifies to this activity being undertaken at the site. The hearth bottom contains droplets of copper alloy suggesting copper was also worked. The inclusion of charcoal in this hearth bottom indicates that was the fuel used but the slag from 989 incorporated coal which might indicate that coal was also being used. Despite the very low densities of these finds in the samples, when their distribution was considered across the site, most of the samples taken in the northern part of the southern area produced hammerscale and prill. The two samples that produced the highest prill component occur in this area, and the two samples with the most slag also occur in this area. While the overall distribution indicates that iron smithing debris is entering deposits across the whole site it would appear that the northern part of the southern area is likely to be closest to contemporary smithing activity. The relatively close proximity of the two samples with a relatively high prill component, contexts 1041 and 989, reinforces this suggestion. It is unusual to have such a high micro-prill content with such low hammerscale counts but no explanation can be offered at present.

The fired earth component, high magnetic content, and fuel ash slag in the flots of context 982 in pit 981 suggests that this feature was receiving hearth debris and its location within ring ditch 906 might suggest proximity to the hearth within the roundhouse.

The environmental evidence from the samples is almost entirely restricted to the flots (Table 6). These are variable but generally fairly poor. Flot volume ranges from less than 1 ml to 130 ml with one sample producing a flot of 1.83 litres. The majority of the flots included small fragments of coal and cinder, with a few producing fuel ash slag. All but one produced charcoal, most produced a few charred or mineralised seeds, over half produced charred cereal grain, and a little less than half charred cereal chaff. In the majority of the samples fragments of grain or chaff numbered less than 10 and in many cases the condition of this material is poor and only a proportion of the grain will be identifiable to species. Preliminary identification indicates the presence of barley and wheat, with possible oats, but grasses, particularly *Danthonia decumbens* (heath grass), are also frequent. The cereals represented may well be more easily identified from the chaff than the grain. Only six samples produced charred grain in double figures, and only one of these, 1063, was rich. Only five samples produced chaff in double figures, two of which, 752 and 1063, are rich. In general the frequency of charred weed seeds and grasses is greater than cereal remains, but only the same two samples are rich. Both these rich samples comprise an assemblage of cereal grain, chaff fragments, grass seeds and weed seeds and suggest crop processing activity, and their occurrence in adjacent features probably indicates that they derive from the same activity or event, and may indicate crop processing at this location. Grain and chaff are both distributed across the whole site but there are no great concentrations in the samples apart from these two samples.

The samples at the north end produced only chaff, a group of samples south of these produced mainly grain, but in the two major concentrations of features in the centre and south end of the site many samples produced both grain and chaff, suggesting perhaps that both crop processing and domestic activities were being undertaken in these areas. A more thorough consideration of these distributions and their significance must await the detailed archaeobotanical study of the flots. This data is not corrected for sample volume so should be taken as a guide of concentrations and not a real reflection of density.

The charcoal component of the flots is composed of wood (timber, large wood or large roundwood), small roundwood, twigs, tubers and occasional straw or stems. The bulk of the twiggy material appears to be heather (although this will need to be checked by the wood anatomist) and occurs in most of the samples, although a few, 961, 1046, 1180, 1181 contain only charcoal from larger wood. However only one sample produced charred leaves of heather. Straw or stems are not particularly common but tuberous material is present in many samples and abundant in a few. These clearly derive from a number of different taxa and are probably from grasses or similar plants but unfortunately at present there is no key for the identification of this material. Their presence in the samples suggests that either dry material is being uprooted for use as tinder, or perhaps even turves are being used on the fires. Alternatively the material may be disposed of on the fires after use elsewhere, perhaps as bedding. To take the interpretation of this material any further will need its specific identification which will almost certainly require the establishment of a reference collection of the tubers and roots of grasses and other likely plants.

The presence of small roundwood, twigs and tuberous charred remains in many of these samples indicates that there is an abundance of material that is suitable for radiocarbon dating although its presence in quantity is limited to a few samples. The table (Table 6) indicates with a '?' those samples most likely to produce material suitable for C14 dating, and although these will generally require AMS dating three of the samples, 961, 1180 and 1181 may produce sufficient material for a standard radiocarbon date subject to the selection of younger wood from the sample by the wood anatomist. Several of the other samples also contain material that could be dated by AMS but these are represented by smaller flots that might include material from a variety of different sources, including re-worked charcoal.

The richer and larger flots are more likely to reflect a single deposition episode. For the samples from contexts 752 and 1063, the richest seed assemblages, the dateable material are the seeds themselves and these would need detailed analysis before submission for dating.

In addition to the soil samples fourteen samples of charcoal were collected by hand on site for identification or radiocarbon analysis. These are listed in Table 7 with a brief description and an indication of their suitability for C14 dating. 887, 1035, 1063 and 1181 would all be suitable for standard C14 dating if their identification indicates that they all derive from smaller roundwood of limited age. The samples of 5g or less would probably require extended counting or AMS analysis.

3.3 Discussion and recommendations

The evidence from the samples and industrial waste indicates that iron smithing, possibly copper working, crop processing and domestic activity are occurring on the site. There is some indication that the spatial distribution of this evidence suggests a focus of smithing in the south central area of the site and crop processing in the centre and possibly also the south central area. The survival of all environmental evidence except charred plant remains is either very poor or non-existent. Only burnt bone or tooth enamel fragments have survived, no shells are present and no waterlogged remains have survived although some seeds are heavily mineralized and may not be charred.

The only domestic animals identified from the site are a single cattle bone collected during excavation and two pig tooth fragments from the samples, while barley and wheat are indicated as crops, although the specific types have yet to be identified. A single fragment of hazelnut shell is the only other confirmed food taxa. There is an abundance of charred grass seeds, tuberous material (probably grasses) and probable heather wood which may reflect fuel and tinder or possibly some other use. Previous studies of this period in this part of County Durham are very limited. Huntley (Huntley and Stallibrass 1995) records only two Iron Age plant assemblages in this area, both studied by Van der Veen. These include the extensively sampled site at Thorpe Thewles (Van der Veen 1987) and a small site at Coxhoe. Plant item densities at Thorpe Thewles are similar to those from Pig Hill and the relative abundance of chaff and grasses was also noted at Thorpe Thewles and other contemporary sites (Huntley and Stallibrass 1995).

Further study of the material from the samples should be restricted to the charred plant and charcoal remains. Although only two samples show any great abundance of charred seeds and chaff fragments, both might reflect the same specific event and need not reflect the crops being grown and utilised at the site. The small numbers of grain and particularly chaff in the majority of the samples are likely to reflect more closely both the types and relative importance of the cereal crops grown and harvested. Despite the poor preservation of the grain and the probable low identification rate the identification of the chaff should be much more straightforward and will give a clear indication of the crops being processed at the site. Charred weed diversity appears to be quite low, but the consistent occurrence of grass seeds, including heath grass, and other taxa may reflect something of the ecology of the arable fields or other sources for the charred seed assemblage. The mineralized seeds pose a problem but the archaeobotanist should be able to separate these from the charred material after careful study. A selection of the richer charcoal samples need to be studied to assess the fuels being used at the site and to try and account for the differences between some samples that are predominantly wood charcoal while others include abundant twigs. The identification of the latter as possible heather needs to be tested and the presence of other twiggy species that could account for this material. All samples selected for radiocarbon dating should be identified and the most suitable material selected for dating. The most problematical area is the charred tuberous material. It may be possible to put together a reference collection of potential tubers from local grasslands in the locality of the site which could be used to

identify this component of the assemblage. Since several taxa are clearly represented and the tubers are abundant in many samples their identification is likely to contribute to the interpretation of the charred plant assemblages.

Archaeobotanical study will only need to involve the identification of the sorted material, checking the flots for efficiency of sorting and identification of the tubers. This should be carried out for all samples that produced identifiable material. For the analysis of the charcoal it is recommended that this is restricted to the fourteen samples where flot size exceeds 15ml, and a quick scan of some of the 10-15ml samples to confirm the identification of the twiggy material.

3.4 Acknowledgments

I should like to thank Jez Dubber, Trude Maynard and Alison Foster for the washing and processing of the soil samples.

Table 3: Harehill Moor Summary of the finds from the processed samples

finds code	cont. no.	samp. vol. in l.	feature	residue vol. in l.	pot £/#	fired earth/ daub wt g	fuel ash slag	slag wt g	coal wt g	mag wt g	ham'er scale no.	bone wt g.	comments
AA	2003	30	Upper fill of curvilinear ditch 2002	0.9		<1	+			2			1g cindery slag?
AB	2003		Charcoal sample										Small piece of roundwood
AA	2058		Charcoal sample										Small piece of roundwood
AA	2068	30	Fill of ditch 2002	1.5	1/2		+			4		<1	Calcined bone
AA	2069	9	Fill of ditch 2002	0.3	1/<1		+		2	<1			
AA	2106	29	Fill of ditch 2002	2	2/1	+	+	+		1			
AA	2107	30	Fill of ditch 2002	2			+			3			Chip of flint (<1g) natural?
AA	2005	30	Fill of curvilinear ditch 2004	1.7						1			
AA	2075	27	Fill of ditch 2004	1.6						<1			
AA	2007	28	Fill of curvilinear ditch 2006	1.5	1/3					1			
AA	2053	27	Primary fill of ditch 2006	1.5					+	<1			
AA	2076	23	Fill of ditch 2006	1						<1			
AA	2013	21	Primary fill of curvilinear ditch 2012	0.6					+	1			
AA	2014	24	Secondary fill of ditch 2012	0.7		2	+			4	1?		
AA	2016	15	Fill of curvilinear ditch 2015	0.1									
AA	2018	24	Fill of curvilinear ditch 2017	0.5				+		<1			
AA	2042	16	Fill of posthole 2041	0.5			++	+		5			
AA	2044	10	Fill of posthole 2043	0.3			+	+		1			
AA	2048	30	Fill of pit 2047	2.8	3/4					1			
AA	2056	30	Primary fill of curvilinear ditch 2057	0.3					++				
AA	2080	27	Fill of curvilinear ditch 2050	1					9	<1			
AA	2082	19	Fill of curvilinear ditch 2090	1						1			Stone (natural or grinding stone?)
AA	2093	27	Fill of curvilinear ditch 2049	0.5					1	<1			
AA	2097	8	Fill of ditch 2049	0.05					+				

£/#- sherd no/weight in g.

+ small pieces in flot or magnetic fraction

Table 4: Harehill Moor Summary of the environmental finds from the sample flots

finds code	cont. no.	samp. vol. in l.	feature	flot vol. in ml.	char-coal \$	charr'd grain *	chaff *	charr'd seed *	water-logged seed	insect	Preliminary comment
AA	2003	30	Upper fill of curvilinear ditch 2002	5	3/3	1		1			Barley?
AA	2068	30	Fill of ditch 2002	45	4/5	2	2	3			Wheat?, grass/brome, tubers, roundwood and twigs
AA	2069	9	Fill of ditch 2002	12	3/4	1	1	2			Barley, tubers
AA	2106	29	Fill of ditch 2002	5	3/3	1	1	2			Barley, tubers
AA	2107	30	Fill of ditch 2002	8	2/2	1		1			Barley, <i>Danthonia</i> , tuber
AA	2005	30	Fill of curvilinear ditch 2004	5	2/3	1		1			Tubers
AA	2075	27	Fill of ditch 2004	5	1/3		1	1			Brome?, tubers
AA	2007	28	Fill of curvilinear ditch 2006	10	2/3	1		1			Oat/grass?, tuber
AA	2053	27	Primary fill of ditch 2006	5	2/2			1			Tubers
AA	2076	23	Fill of ditch 2006	4	1/3	1	1	2			
AA	2013	21	Primary fill of curvilinear ditch 2012	2	2/2						
AA	2014	24	Secondary fill of ditch 2012	3	2/3			1			
AA	2016	15	Fill of curvilinear ditch 2015	50#	1/3				5/3	3/2	Caddis larvae, abundant <i>Rubus</i>
AA	2018	24	Fill of curvilinear ditch 2017	35#	3/3		1		5/3	2/2	<i>Rubus</i> , lots spores, wood,
AA	2042	16	Fill of posthole 2041	3	2/2						
AA	2044	10	Fill of posthole 2043	5	3/3			1			
AA	2048	30	Fill of pit 2047	10	2/3						
AA	2056	30	Primary fill of curvilinear ditch 2057	10	2/3			1			
AA	2080	27	Fill of curvilinear ditch 2050	2	1/2						
AA	2082	19	Fill of curvilinear ditch 2090	7	2/2	1	1	2			Wheat?, grasses, hazelnut shell, tuber
AA	2093	27	Fill of curvilinear ditch 2049	1	1/2			1~			
AA	2097	8	Fill of ditch 2049	20	2/5			1			

~ seed not picked out

* frequency; 1= 1-10; 2 = 11-50; 3 = 51-150; 4 = 151-250; 5 = >250 items

\$ frequency of fragments of charcoal >2mm and <2mm

#waterlogged flot

Table 5: Pig Hill: Summary of the finds from the processed samples

finds code	cont no.	samp. vol. in l.	feature	residue vol. in l.	pot £/#	clinker ? wt g.	fired earth/daub wt g	flint	slag wt g	coal wt g	mag wt g	ham'er scale no.	prill	bone wt g.	comments
AA	709	28	Fill of ditch 708	2.5	3/8		5	1/<1	1	5	7	2	+	<1	Calcined bone
AA	711	18	Fill of ditch 710	1			13			<1	6		+		Iron rich concretions-13g
AA	713	25	Fill of ditch 712	2.5					<1	2	5	1	+	1	Pig tooth
AA	717	30	Fill of curvilinear ditch 716	1.6				2/2		3	7	3	+		
AB	744	30	Fill of ditch 745	2					<1	<1	2		+		
AA	752	27	Fill of ditch 751	1.5		<1	??			<1	3		+		Light porous stone fragment- 7g
AA	758	24	Fill of ditch 757	1.9						4	1		+		Fragment of gritstone (possible quern?)-44g; light porous stone fragment- 21g
AA	760	25	Fill of ditch 759	2.1					<1		2		+	<1	Calcined bone
AA	763	26	Fill of ditch 762	2						<1	5		+		
AA	767	23	Fill of ditch 766	2.7	1/<1	<1		1/<1			3	2	+		
AA	770	30	Fill of ditch 772	2.5	1/4		224			<1	7	2	+	1	Calcined bone
AA	771	9	Fill of ditch 772	1.2	2/4						8	1	+		
AB	778	20	Fill of ditch 777	1.1						3	5	1	+		
AA	789	30	Fill of ditch 788	2.7						6	5		+		
AA	791	24	Fill of ditch 792	1.2				1/<1		1	4	2	+		
AA	794	20	Fill of ditch 793	1							1		+		
AA	798	29	Fill of ditch 797	1.9	1/3		4			1	7	3	+		
AA	804	24	Fill of ditch 803	1.3				1/<1		3	7	3	+		
AA	830	25	Fill of ?pit/ditch 829	1.5	1/1	4			12	10	4	5	+		
AA	853	27	Fill of gully 854	2		<1		1/<1		5	4		+		2x glass (mod?)
AA	873	30	Fill of pit 874	5.2						2	2		+		?burnt stones
AA	879	20	Fill of ditch 880	2.5	1/<1					36	2		+		
AA	886	9	Fill of posthole 885	1				1/<1			3				
AA	888	28	Fill of pit 889	2.6	1/1				3	3	1		+	<1	Calcined bone
AA	891	7	Fill of ditch 892	0.7						<1	2		+		
AA	905	16	Fill of gully 904	1.5		<1					2		+		
AA	907	27	Fill of curvilinear gully 906	2				1/<1		3	3		+		
AA	935	24	Fill of gully 934	1.25						<1	<1				
AA	936	9	Fill of posthole 937	1.1						3	2		+		
AA	947	1.5	Fill of posthole 946	0.1							1				
AA	953	6	Fill of posthole 952	0.6						<1	<1				
AA	956	25	Fill of ditch 957	1.3				1/<1		1	4	2	+	<1	Calcined bone
AA	961	12	Fill of pit 962	4	1/1	1			2	8	2	3	+		Post-med pot?; light porous stone fragment-4g
AA	966?	28	Fill of curvilinear ditch 965	4.25	1/<1	<1				5?	4		+		
AA	969	2.5	Fill of posthole 968	0.03							<1				Stone fragment with worn surface-196g
AA	971	0.5	Fill of posthole 970	0.01							<1				
AA	973	26	Fill of curvilinear ditch 950 (?717)	0.9							4	1	+		1x glass (mod?)

Cowpen Bewley to Warden Law Gas Pipeline, County Durham: Post excavation assessment report

Table 5: continued

Finds Code	cont. no.	samp. vol. in l.	Feature	residue vol. in ml.	pot £/#	clinker ? wt g.	fired earth/ daub wt g	flint	slag wt g	coal wt g	mag wt g	ham'er scale no.	prill	bone wt g.	comments
AA	976	8.5	Fill of pit 975	0.5					<1		2	3			
	978	2.5	Fill of pit 977	0.2	2/3					<1	1		+		
AA	982	30	Fill of pit 981	2			46			1	38		+		
AA	989	5	Fill of pit 988	0.5					79	<1	3		+++		Slagged piece of furnace or hearth lining - 1g
AA	991	29	Fill of pit 990	3.3						3	1		+		
AA	992	17	Fill of pit 1039	0.7		2	21	1/<1		1	2		+		Fired material/brick - 21g.
AA	993	9	Fill of pit 1039	0.175							1		+		
AA	1035	25	Fill of ditch 1034	2.4	5/4	<1	<1	1/<1		1	6	1	++		
AA	1038	30	Fill of pit 1039	0.6		<1				72	2		+		
AA	1041	1.5	Fill of posthole 1040	0.07		2				2	1	1	+++		
AA	1043	4	Fill of posthole 1042	0.25							2		+		
AA	1044	30	Fill of curvilinear ditch 965	3		<1		1/<1		8	6		++		
AA	1046	2	Fill of posthole 1045	0.125				1/<1		<1	1		+		
AA	1051	24	Fill of ditch 1050	1.5						1	1				Light porous stone fragment- 5 pieces-some join-possibly faceted - 48g
AA	1052	28	Fill of ditch 1050	3.3		<1				4	4		+		Light porous stone fragment- 11g
AA	1063	27	Fill of gully 934	1							4				
AA	1067	27	Fill of pit 1066	2.2		<1		1/<1		5	4		+		
AA	1069	30	Fill of gully 1068	2.6	1/2		<1			<1	4		+		
AA	1070	30	Fill of gully 1071	2.6	1/1				1	3	5		+		
AA	1083	30	Fill of gully 1082	2.2	1/1?	1			2	3	4		++		
AA	1085	27	Fill of gully 1084	2.5							3		+		
AA	1087	29	Fill of ditch 1086	4		1				<1	1		+		Light porous stone fragment- 12g
AA	1090	28	Fill of gully 1094	2.4		<1				<1	2		+	2	Pig tooth
AA	1096	3.5	Fill of posthole 1093	0.2							<1		+		
AA	1099	8	Fill of ditch 1086	0.85							<1		+		
AA	1101	16	Fill of ditch 1105	1		<1				1	2		+		
AB	1102	30	Fill of ditch 1100	2			<1			2	4	1	+		
AA	1116	28	Fill of ditch 1117	1.9			1			<1	1				
AA	1129	21	Fill of ditch 747	0.65		<1		1/<1			1				
AA	1132	20	Fill of ditch 747	1.1	1/4						2		+		
AA	1153	20	Fill of pit 1152	2	1/3		<1				1		+		
AA	1154	25	Fill of gully 1155	2.1						3	3		+		
AA	1157	30	Buried soil layer	1.4				1			2		+		
AA	1178	9	Fill of ditch 1177	0.45							1	4			
AA	1180	18	Fill of pit 1182	1.2							3	1			
AA	1181	15	Fill of pit 1182	0.3							4		+		

£/#- sherd no/weight in g.:

+ - 1-10; ++ 11-50; +++ >50 pieces of prill/slag in magnetic fraction

Table 6: Pig Hill: Summary of the environmental finds from the sample flots

finds code	cont. no.	samp. vol. in l.	feature	flot vol. in ml.	fuel ash slag	coal/cinder #	char-coal *	charr'd grain *	chaff *	charr'd seed *	C14?	Preliminary comment
AA	709	28	Fill of ditch 708	15	+		3/4		1	2	?	Heather, <i>Danthonia</i> , tubers, wood, small roundwood, twigs
AA	711	18	Fill of ditch 710	6		+	3/3			1	?	Wood, twigs (heather?), grass, tubers
AA	713	25	Fill of ditch 712	15			3/4			1	?	Wood, small roundwood, twigs (heather?), tubers, <i>Danthonia</i>
AA	717	30	Fill of curvilinear ditch 716	15		+	2/5	1	1	2		Tubers, wood, twigs, <i>Danthonia</i>
AB	744	30	Fill of ditch 745	3		+	2/2			1	?	Wood, roundwood, twigs, tubers
AA	752	27	Fill of ditch 751	10			2/4	2	4	5	?	Barley?, grasses, wood, small roundwood, twigs, tubers
AA	758	24	Fill of ditch 757	5		+	1/3	1		1		<i>Danthonia</i>
AA	760	25	Fill of ditch 759	15			2/4	1	1	2		Barley, grasses, twigs
AA	763	26	Fill of ditch 762	10			3/3	1	1	2		<i>Danthonia</i> , tubers, twigs
AA	767	23	Fill of ditch 766	6			3/3	1	1	2		Wheat?, <i>Danthonia</i> , tubers, twigs
AA	770	30	Fill of ditch 772	40			4/5	1	2	3	?	Barley?, <i>Danthonia</i> , grasses, wood, small roundwood, twigs (heather?) straw/stems, tubers
AA	771	9	Fill of ditch 772	5			3/3	1		2		Wood, twigs, tubers
AB	778	20	Fill of ditch 777	20			4/5	1	1	2	?	<i>Danthonia</i> , grasses, wood, small roundwood, twigs, tubers
AA	789	30	Fill of ditch 788	7			2/4	1	1	2		Grass, tubers, wood, twigs (heather?)
AA	791	24	Fill of ditch 792	10			3/4	2		2		Wheat, barley, tubers
AA	794	20	Fill of ditch 793	1		+	2/2		1			Chaff charred but not carbonised - recent?
AA	798	29	Fill of ditch 797	15		+	3/4			2		<i>Danthonia</i> , grasses, wood, twigs (heather?)
AA	804	24	Fill of ditch 805	50	+		4/5	2	2	3	?	Wheat?, barley, <i>Danthonia</i> , grasses, wood, roundwood, twigs
AA	830	25	Fill of ?pit/ditch 829	25	+	+	3/5	1	1	2		Hazelnut, <i>Danthonia</i> , tubers, roundwood, twigs
AA	853	27	Fill of gully 854	55		+	5/5	2	1	3	?	Wheat?, barley?, oats?, <i>Danthonia</i> , grasses, tubers, wood, roundwood, twigs (heather?), straw/stems
AA	873	30	Fill of pit 874	18			3/4	1	1	2	?	Tubers, twigs (heather?)
AA	879	20	Fill of ditch 880	40			4/5	1	2	2	?	Barley?, oats?, grass?, tubers, wood, roundwood, twigs (heather?)
AA	886	9	Fill of posthole 885	2		+	2/3					
AA	888	28	Fill of pit 889	10		+	3/3	1	1	1		Tubers, wood, roundwood, twigs
AA	891	7	Fill of ditch 892	4		+	2/3	1	1	1		Grasses, tubers, wood, twigs
AA	905	16	Fill of gully 904	2		+	1/3	1		1		Wheat?
AA	907	27	Fill of curvilinear gully 906	15		+	3/4	1	1	1		Grasses, tubers
AA	935	24	Fill of gully 934	1		+	1/1					Tubers
AA	936	9	Fill of posthole 937	1		+	1/2			1		
AA	947	1.5	Fill of posthole 946	2	+	+	1/2			1		<i>Danthonia</i>
AA	953	6	Fill of posthole 952	1		+	1/2		1	1		Tubers
AA	956	25	Fill of ditch 957	2		+	2/3	1		1		Barley?, <i>Danthonia</i> , tubers
AA	961	12	Fill of pit 962	110		+	5/5	1		1	?	Wood and roundwood
AA	966?	28	Fill of curvilinear ditch 965	5		+	2/3	1	1	1		<i>Danthonia</i> , grass
AA	969	2.5	Fill of posthole 968	1		+	1/2					
AA	971	0.5	Fill of posthole 970	None								
AA	973	26	Fill of curvilinear ditch 950 (?717)	5		+	2/4	1	1	1		Wheat, tubers, wood, twigs

Cowpen Bewley to Warden Law Gas Pipeline, County Durham: Post excavation assessment report

Table 6: continued

finds code	cont. no.	samp. vol. in l.	feature	flot vol. in ml.	fuel ash slag	coal/cinder #	char-coal *	charr'd grain *	chaff *	charr'd seed */\$	C14	Preliminary comment
AA	976	8.5	Fill of pit 975	1		+	1/-	1				
	978	2.5	Fill of pit 977	5		+	2/3			1		
AA	982	30	Fill of pit 981	8	++	+	2/3	1		2		Barley?, wood, small roundwood, twigs
AA	989	5	Fill of pit 988	11	+	+	3/4	1	1	1		Wheat?, <i>Danthonia</i> , tubers, twigs
AA	991	29	Fill of pit 990	6		+	3/4	1	1	1		Wheat?, tubers, wood, twigs
AA	992	17	Fill of pit 1039	15			4/5	1	1	2	?	Barley?, wheat?, <i>Danthonia</i> , tubers, wood, twigs (heather?)
AA	993	9	Fill of pit 1039	1		+	1/3		1	1		<i>Danthonia</i> , tubers
AA	1035	25	Fill of ditch 1034	40			5/5	1	1	2	?	<i>Danthonia</i> , tubers, wood, roundwood, twigs (heather?)
AA	1038	30	Fill of pit 1039	4		+	1/2	1	1	1		Tubers
AA	1041	1.5	Fill of posthole 1040	4		+	1/1		1			
AA	1043	4	Fill of posthole 1042	2			1/3	1		1		
AA	1044	30	Fill of curvilinear ditch 965	7			3/3	1		1		Tubers, wood, twigs
AA	1046	2	Fill of posthole 1045	10			3/4			1		Tubers, wood, no twigs
AA	1051	24	Fill of ditch 1050	<1		+	1/1					
AA	1052	28	Fill of ditch 1050	1		+	1/2	1				Barley?, tubers
AA	1063	27	Fill of gully 934	30			1/3	5	5	4	?	Barley, wheat?, abundant grasses
AA	1067	27	Fill of pit 1066	2			2/2			1		Grasses, tubers, wood
AA	1069	30	Fill of gully 1068	1		+	1/3		1	1		
AA	1070	30	Fill of gully 1071	9	+	+	2/4		1	1		Tubers, wood, twigs (heather?)
AA	1083	30	Fill of gully 1082	35	+	+	1/3		1	1		
AA	1085	27	Fill of gully 1084	5		+	1/3			1		Tubers
AA	1087	29	Fill of ditch 1086	1			2/2	1		1		Tubers, 1 shell <i>Cecilioides acicula</i>
AA	1090	28	Fill of gully 1094	1		+	1/1	1		1		
AA	1096	3.5	Fill of posthole 1093	<1		+	-/1					
AA	1099	8	Fill of ditch 1086	1		+	1/1			1		<i>Danthonia</i> , tubers
AA	1101	16	Fill of ditch 1105	1		+	1/1	1		1		Tubers
AB	1102	30	Fill of ditch 1100	6	+	+	3/3			2		Tubers, wood, twigs
AA	1116	28	Fill of ditch 1117	7		+	2/3	1		2		Barley?, grasses
AA	1129	21	Fill of ditch 747	2		+	1/2	1				Tuber
AA	1132	20	Fill of ditch 747	3			1/2			1		<i>Danthonia</i> , grasses, tubers
AA	1153	20	Fill of pit 1152	20			3/4	1		2	?	Tubers, wood, roundwood, twigs (heather?)
AA	1154	25	Fill of gully 1155	8		+	2/3	1	1	1		Barley?, grasses
AA	1157	30	Buried soil layer	7		+	1/2	?				Tuber
AA	1178	9	Fill of ditch 1177	2			2/2	?		1		Tubers
AA	1180	18	Fill of pit 1182	130			5/5	2		2	?	Barley, oats?, <i>Danthonia</i> , grasses, wood, no twigs
AA	1181	15	Fill of pit 1182	1830			5/5	1~		1~	?	Barley, wood, no roundwood or twigs

~ based upon 25% of the 1st flot only; * frequency; 1= 1-10; 2 = 11-50; 3 = 51-150; 4 = 151-250; 5 = >250 items
 #- + present; ++ common; +++ abundant in flot..

Table 7: Pig Hill: Charcoal samples hand picked on site

Context	Sample	Wt. g.		C14
711	AB	<1	Several fragments	
744	AA	2	Roundwood – several pieces	yes
754	AA	-	Charcoal fragment in mud	
763	AA	4	Single piece roundwood- 3cm diameter	yes
778	AA	5	Larger roundwood- 4 pieces	yes
815	AA	2-3	Fragmented lump in soil matrix	?
887	AA	>25	C14 sample - Several pieces of larger roundwood (3cm diam. and more)	yes
935	AB	2-3	Fragmented lump in soil matrix	?
942	AA		Coal	
944	AA	1	Single piece larger wood	
1035	AB	15 d.	C14 sample- fragmented piece larger wood	?
1063	AB	21	14 pieces small roundwood	yes
1102	AA	3	Coal and 4 pieces charcoal	?
1181	AA	200 d.	Charcoal rich matrix with pieces of larger wood and roundwood	yes

d. - weight measured when damp.

Appendix H

ARCHAEOLOGICAL MONITORING

Greg Speed

1.0 BACKGROUND

A watching brief was carried out during topsoil stripping throughout the length of the pipeline, with additional monitoring of excavation of the pipe trench in specific areas where archaeological features were likely to be present or where the subsoil surface had been obscured after topsoil stripping by extensive layers of buried soils. The watching brief was carried out by NAA for Entrepose, the main pipeline construction contractors. The topsoil stripping was carried out between 25 June and 1 August 2003, with intermittent monitoring of the pipe trench excavation continuing to 8 September 2003.

In addition, NAA were asked by Terra Firma Consulting, Transco's archaeological consultants, to produce a Written Scheme of Investigation (WSI) so that the watching brief would be carried out in a manner agreed between Transco, Entrepose, Terra Firma Consulting, NAA and the archaeological officers for Teesside, Durham and Tyne and Wear (NAA 2003a).

2.0 WATCHING BRIEF METHODOLOGY

Topsoil within the fenced pipeline easement was stripped using a variety of methods. The fenced easement was generally 20m, with the stripped area running along the western side usually about 15m wide, the remaining eastern side of the easement being used for topsoil storage. In most areas, topsoil from a strip between 5m and 8m wide along the western side of the easement was cleared by 360° tracked excavator using either a straight-edged ditching bucket or a large blade (which was much quicker and gave a 'cleaner' strip). This produced a corridor wide enough to allow access to bulldozers which then pushed the topsoil from the remaining part of the easement directly onto the topsoil bund. In areas below the numerous overhead power-lines crossing the route, only the edges of the easement were cut by tracked excavator, with the whole of the remainder cleared by bulldozer.

It was only possible to examine the stripped surface produced by the 360° tracked excavator since the bulldozers churned the subsoil surface and also left a spread of loose material over the whole stripped easement. The time interval between the two phases of stripping varied greatly. Along parts of the route the bulldozers were working up to a day behind the tracked excavators, whilst occasionally they were working immediately behind them so that on safety grounds it was not possible for the monitoring archaeologist to enter the space between the two groups of machinery and the watching brief had to be conducted from the edge of the easement. In addition, up to three 360° tracked excavators were used for topsoil stripping, sometimes working in up to three separate (and not always contiguous) fields, meaning that it was not possible for the single monitoring archaeologist to continuously monitor each machine. Since the easement was being used at all times by a considerable number of vehicles, the result of this was that many areas had been trafficked before the stripped subsoil surface could be inspected.

A record was made of the topography, soil and subsoil within each field, together with a written description of any archaeological features or deposits identified. A single pro-forma record sheet was filled-out for each field, following the field numbering system used within the Archaeological Fieldwalking and Field Reconnaissance Survey (Groundwork Archaeology Ltd 2003). The locations of archaeological remains identified (principally ridge

and furrow) were marked onto a set of 1:5000 strip-maps of the route supplied by the construction contractor, which form part of the archaeological archive. Photographs at a 35mm format were taken where possible of archaeological features and to record relevant topographical features and working methodologies.

The stripped subsoil surface and topsoil bund were inspected for artefacts as thoroughly as the programme of topsoil stripping permitted. It was not practicable to undertake a metal-detector survey of the stripped surface and bunds. Due to the rate of stripping it was not possible to undertake any hand-excavation.

3.0 SUMMARY OF RESULTS

Due to the lack of archaeological control over the topsoil stripping, the resulting stripped surface varied in quality from an archaeological point of view from average to extremely poor. In many areas the tracked excavators achieved only incomplete removal of topsoil, removal of the remaining material being carried out by bulldozers which churned the subsoil surface and also left it covered in loose material, masking any archaeological features.

A small assemblage of five prehistoric worked flints were recovered from widely spaced locations in four fields, mainly towards the southern end of the route (fields 0/1, 1/8 (2 flints) and 2/5). The other piece was recovered from field 8/9 on Harehill Moor and perhaps suggests the presence of an early to middle Neolithic settlement nearby (see Appendix C). Overall, the small size and dispersed nature of the flint assemblage contributes little to our understanding of settlement and activity patterns across the landscape during the earlier prehistoric period.

Later prehistoric activity was represented by an Iron Age settlement site in field 8/10 on Harehill Moor which was subsequently excavated and which is described in more detail above.

The majority of archaeological evidence recorded during the watching brief consisted of elements of the medieval agricultural landscape, mainly truncated furrow-bases or upstanding earthworks of former ridge and furrow cultivation.

Ridge and furrow was previously known from aerial photographs (APs) in fields 1/2, 1/3, 2/5, 3/3, 7/1, 7/3, 8/7, 8/8, 8/9, 8/10, 16/6, and 16/7 seen during the watching brief in these fields.

During the watching brief, ridge and furrow known from APs or surviving as upstanding earthworks was confirmed within the stripped corridor within nine fields: 1/3 (APs), 3/3 (APs), 3/6 (earthworks), 3/7 (earthworks), 3/8 (earthworks), 5/13 (earthworks), 8/7 (APs), 8/8 (APs) and 8/9 (APs).

Within field 4/11, furrow bases from former ridge and furrow were recorded during the watching brief cutting into the subsoil on a different alignment to overlying earthwork ridge and furrow, showing that two different phases of this type of cultivation had occurred.

The watching brief identified previously unrecorded ridge and furrow within 37 fields, surviving as furrows cutting into the subsoil. These fields were 1/4, 1/5, 1/6, 1/7, 1/8, 1/9, 2/1, 2/2, 2/3, 2/4, 2/10, 3/1, 3/12, 3/13, 4/1, 4/2, 5/1, 5/2, 5/7, 5/8, 5/9, 5/10, ?5/14, 5/15 (including a headland), 6/1, 6/9, 8/3, 8/4, 8/5, 8/6, 8/12, 9/3, 11/2, 11/7, 12/1, 15/2 and 16/9 (together with a hollow way, headland, a former field boundary and ditches).

An overgrown former drove-way or green lane was identified running between fields 5/2 and 5/3.

Minimal recording of several former railway lines was possible, although in general this did not provide any useful information. These included the former Stockton and Castle Eden

branch line between fields 5/13 and 5/14, the former North Eastern Railway Thornley branch between fields 8/1 and 8/2 and the former North Eastern Railway Durham and Sunderland branch in field 16/3. No evidence was seen for the former Green Hills railway between fields 7/3 and 8/1. The routes of the former North Eastern Railway Ferry Hill and Hartlepool Branch between fields 6/7 and 6/8 and the former Rainton and Seaham Railway at the northern side of field 16/10 were both crossed by directional drilling, precluding any recording.

Despite the extensive former coal mining within areas crossed by the pipeline route, little new information on this industry was recorded during the watching brief. A colliery waste tip not identified by the desk-based assessment was recorded in field 6/13. An expected colliery waste tip in fields 7/3 and 8/1 was not identified and probably lay to the east of the pipeline route. Part of a colliery railway embankment was recorded in field 9/1. No evidence was seen for a former colliery building known from cartographic sources to have been crossed by the route within field 9/3. This was probably as a result of tipping of colliery waste, which had also obscured any evidence of former wagon-ways or railway lines in field 9/4. To the north, this tip also obscured any remains of two rows of cottages which formerly stood in field 10/1.

A substantial dump of Second World War munitions was identified within field 8/9 on Harehill Moor.

No evidence for the crop-mark enclosure site (Site 8) in field 16/4 was identified.

4.0 WATCHING BRIEF DISCUSSION

The watching brief, partly due to the limitations imposed upon it by the topsoil stripping methodology, recorded only a relatively small number of archaeological features. The only significant site identified as a result of the watching brief was the Iron Age settlement site on Harehill Moor. The majority of other features identified consisted of patterns of ridge and furrow of probable medieval date. These served to extend the known areas of medieval arable exploitation within the region. The fields containing ridge and furrow were clustered within distinct zones, presumably associated with individual medieval settlements, with extensive areas between where no such features were identified. One extensive area lay at the southern end of the pipeline route, to the east and north of Newton Bewley, within fields 1/3 – 1/9 (and 1/2 from APs) and 2/1 – 2/4 (and 2/5 from APs). Another group to the west near Low Stotfold and Gunnersvale Farm included fields 2/10, 3/1 and 3/3. At Site 1 extensive earthwork remains of ridge and furrow to the south-west and west of High Stotfold survived within fields 3/6 – 3/9 and possibly formerly in 3/10 (from APs). This area of ridge and furrow was extended northwards past Green Acres Farm by the identification during the watching brief of furrow-bases within fields 3/12, 3/13 (Site 2), 4/1 and 4/2. In the area between Pudding Poke Farm and Wood Close Farm, an area of earthwork ridge and furrow in field 4/11 (Site 3) was shown to be of more than one phase, with furrows cutting into the subsoil running on a different alignment to the overlying earthworks. This area of former cultivation was extended northwards by the recording of furrow bases within fields 5/1 and 5/2. A coherent group of ridge and furrow was identified within fields 5/7 - 5/10, immediately to the south of, and presumably associated with, Catlow Hall Farm which is hence likely to be of medieval origin. A known group of ridge and furrow to the west of Hart Bushes Hall within fields 5/12 and 5/13 (Site 4) was extended to the north-west by identification of furrows within fields 5/14 and 5/15 with more features identified to the north-east of Woodlands Close within field 6/1. Ridge and furrow possibly associated with the former Wingate Grange, now probably buried beneath a colliery tip, was identified within field 6/9. Previously recorded ridge and furrow on Green Hills Moor (fields 7/1 and 7/3) was not identified, probably due to poor stripping conditions. An area of ridge and furrow known from APs on Harehill Moor between High Crow's House and Harehill Farm (fields 8/7 – 8/10) was extended southwards to Low Crow's House by identification of furrows within fields 8/3 - 8/6. Scattered evidence for ridge and

furrow was identified to the east of Haswell Plough in fields 8/12 and 9/3, with more to the north of the village in field 11/2. In field 9/3 the earthworks had been levelled-up by waste from the adjacent colliery. An area of earthwork ridge and furrow to the north-west of Haswell (fields 11/4 and 11/5, Site 6) was avoided due to re-routing of the pipeline, but was shown to extend northwards into fields 11/7 and 12/1. Although ridge and furrow was identified during excavations at Pig Hill, none was identified within adjacent fields during the watching brief. An isolated area of ridge and furrow was seen within field 15/2 halfway between Hetton-le-Hole and Murton, to the south-east of Eppleton Hall. Ridge and furrow known from APs in the area to adjacent to the medieval settlement at Great Eppleton in fields 16/6 and 16/7 (Site 9) were not identified during watching brief. However, a previously unidentified group of slight earthworks including blocks of ridge and furrow with an intervening headland and including a partially silted ditch were identified in field 16/9 on The Moors halfway between Great Eppleton and Warden Law. These features had been cut through by a hollow way and overlain by a later former field hedge and ditch.

The small assemblages of medieval and post-medieval pottery recovered at various points along the pipeline route during the fieldwalking survey, trial trenches and watching brief are individually of little intrinsic interest, as noted for each site within the pottery assessment. However, even small groups of material can provide important information on past landscape usage and population levels and settlement pattern. As an example, a recent watching brief in advance of gravel extraction near to the village of Scorton, North Yorkshire recovered a small assemblage of some 208 sherds of pottery from the stripped gravel surface across an area of 7.25 ha, dating from the 12th to 14th and 17th to 20th centuries (NAA 2003d). The surface of the gravel across much of the site was cut by the furrow-bases of former ridge and furrow cultivation. Because the site had been divided into six broad collection areas, each as large as many of the fields crossed by the Cowpen Bewley to Warden Law pipeline, it was possible to show that there was a distinct patterning within the overall pottery assemblage, with 12th century sherds restricted to an area of ridge and furrow nearest to the medieval village. Pottery dateable to the 13th century together with a small group of 14th century material was spread across the whole site, showing that there had been a major expansion of the area of arable cultivation during the 13th century, suggesting rapid population growth. The absence of later 14th to 16th century material suggested a dramatic decline in population and change in agricultural practice during that period, with the land only coming back into arable usage from the 17th century onwards. There is evidence nationally for the population having perhaps trebled between the late 11th and early 14th centuries, but then being reduced by as much as half in the aftermath of widespread crop failures and sheep and cattle diseases resulting in famines between 1315 and 1325, the wars with Scotland and France and the ravages of successive outbreaks of the Black Death in the mid-to late 14th century. The population continued to remain low through the 15th century (Bolton 1980, 56, 180-3). There was much change in the rural economy in the aftermath of these disasters, which led to numerous village desertions and shrinkages, abandonment of marginal land and changes towards production of less manpower-intensive cash crops such as wool (Hoskins 1955, 123). The evidence from the pottery assemblage from Scorton seems to support this pattern closely. It is interesting to note that a similar pattern of date range seems to be present within the pottery collected during the fieldwalking survey conducted in advance of construction of the Cowpen Bewley to Warden Law pipeline, for instance within fields 1/3, 1/7, 2/1, 2/3, and 2/4 where medieval pottery associated with areas of ridge and furrow was 14th century in date, then with a gap in the date range to the 16th or 17th century.

The small assemblages of pottery from the Cowpen Bewley to Warden Law pipeline are thus of value if treated together as a group. Their distribution and dating, taken together with other evidence such as the distribution of ridge and furrow cultivation, whether recorded from aerial photographs, excavation or watching brief, and aggregated with data from previous and future pottery assemblages within the area, can begin to provide a framework for study of agrarian landscape usage and population distribution within the East Durham area during the medieval and early post-medieval periods. In order to develop such a cumulative body of

data, it is essential that even small assemblages such as those from the Cowpen Bewley to Warden Law pipeline be, as a minimum, adequately catalogued and dated.

5.0 WATCHING BRIEF RESULTS (Figure 2a-c)

Field 0/1 (NZ 476 253) Between the lane to the north of Cowpen Bewley AGI and the A 1185

The easement crossed the area with several bends, from south-east to north-west, to north to west to north. Within the southern part of the area the easement ran over a low hill before crossing more level ground to the north. The full width of the easement (only 8-9m in this area) was stripped by tracked excavator. The topsoil was typically dark brown silty clay. The subsoil was mainly either mid-yellow brown or reddish brown boulder clays but varied rapidly and appeared to be re-deposited and very disturbed. Additional disturbance had been caused by modern tree-planting (the area currently forms part Cowpen Bewley Woodland Park). The topography, disturbed subsoil and tree-planting all gave the impression that this area was a reclaimed land-fill site. A worked flint core and six pottery sherds were recovered from this field.

Field 1/1 (NZ 476 256) North of the A1185 and south of Cowbridge Beck

To the north of the road the easement turned to cross this area from south-south-east to north-north-west, running generally downhill to the north. The 10m wide stripped easement had been heavily disturbed by modern tree-planting. Removal of 0.2-0.3m of topsoil revealed a mid-brown sandy clay buried soil, also very disturbed. No archaeological features were identified. The northern end of the area was crossed by an earthwork bank 3m wide and 1m high with a flat top. It approached the area from the west and terminated just to the east of the easement, and now forms the base for a modern footpath and was not stripped due to the presence of an existing gas main. The form of the earthwork suggested that it was probably a disused railway embankment. The Field Reconnaissance Report suggested that this feature was a flood-control bank, but closer examination suggested that it would have been ineffective in such a role and pointless since the ground sloped immediately up to the south in this area. A flat, low-lying area to the north of the bank adjacent to Cowbridge Beck was not stripped, again due to the presence of the existing gas main. Five pottery sherds were recovered within the southern part of the field.

Field 1/2 (NZ 475 257)

The easement crossed this small area from south-south-east to north-north-west to north-west. The area had been heavily disturbed by recent tree-planting. Dark brown silty clay topsoil typically 0.25m thick overlay mid-brown silty clay buried soil horizon. No evidence for former ridge and furrow known from aerial photographs was seen. There was a 0.3-0.4m high lynchet (probably positive) up to a hedge bank with an ancient, grown-out hedge bordering field 1/3 to the north.

Field 1/3 (NZ 475 258)

After entering the southern side of this area, the easement turned sharply to cross it from south-west to north-east. At the south-western end the route was fairly level before running up a long slope to the north-east. The field was under a crop of wheat. The field surface was rather uneven and it is possible that slight earthworks of former ridge and furrow cultivation known from aerial photographs were present, masked by the standing crop. After removal of the topsoil, most of the area was masked by a mid-brown buried soil containing numerous flecks and small lumps of red burnt clay, although in some areas, notably on the slope to the north-east, some areas of reddish brown boulder clay subsoil were revealed. In these areas the buried soil could be seen to be in-filling furrows from former ridge and furrow cultivation. The furrows were up to 4.5m wide and were spaced 8.5m apart, centre to centre. They were aligned from south-south-east to north-north-west parallel to the eastern field boundary. Pottery dating from the 14th and 16th-17th centuries formed the majority of artefacts

recovered from this field during the fieldwalking survey and probably dated from the period(s) of usage of the ridge and furrow. An additional pottery sherd and a fragment of clay tobacco pipe stem were recovered during the watching brief. Within the north-eastern c.30m of the easement in this field, the natural subsoil was mid-yellow-brown sandy clay. The boundary between fields 1/3 and 1/4 was formed by a hedge-bank some 2.0m wide and 0.6m high surmounted by remnants of a mature hedge. There was a slight but distinct lynchet up to the north-east.

Field 1/4 (NZ 477 260)

The easement crossed the centre of field 1/4 which was under a standing crop of wheat from south-west to north-east. Typically, 0.25m of topsoil overlay mid-yellow-brown sandy clay. This was cut by furrow bases of ridge and furrow cultivation on a similar alignment and spacing to those observed within field 1/3, although they contained little of the burnt clay fragments observed in that field. No finds were recovered. The boundary to field 1/5 comprised a low bank 1.8m wide and 0.5m high surmounted by a modern hedge.

Field 1/5 (NZ 478 262)

The easement entered this field near the middle of its western side and then turned northwards. The topsoil and natural subsoil were similar to field 1/4, and the field contained a standing wheat crop. The subsoil was cut by furrow bases of former ridge and furrow cultivation, aligned from east to west at right-angles to those observed in fields 1/3 and 1/4. They were spaced rather more closely, typically at c.5.0m. Individual furrows were up to 3.5m wide and 0.3m deep, and were filled with a relatively stone-free dark brown slightly silty sandy clay soil. Within furrows within the southern c.60m part of the easement this again included up to 5% flecks and small lumps of red burnt clay. At the southern end of the easement, the furrows had been destroyed by the former easement for another gas pipe. This was identified as a broad band of dark purple-brown boulder clay, presumably spread material derived from the deeper pipe trench. Towards its northern end, the field dipped into a slight hollow where the furrows were obscured by a colluvial deposit. To the north of the hollow, the subsoil had changed to mottled reddish-brown and grey boulder clay, and the furrows were again visible on the same alignment. The boundary to field 1/6 was formed by a 0.5m high positive lynchet surmounted by a modern hedge. The lynchet was mainly formed of modern ploughsoil but appeared to incorporate a small, older hedge bank comprised of a more leached soil.

Field 1/6 (NZ 478 263)

The easement crossed the centre of this field from south to north. The field sloped up gradually to the north, and contained a standing crop of wheat. At the southern edge of the field, the modern hedge was flanked within field 1/6 by a 1.2m wide in-filled ditch, the top of the fill incorporating 20th century bottles. Within the southern half of the field, the subsoil was mid-yellow-brown sandy clay, changing to the north to buttery, mixed yellow and mid-brown clays. Parts of the subsoil were masked by areas of a relict mid-brown ploughsoil, but between these furrow bases of former ridge and furrow cultivation were identified cutting into the subsoil on a similar alignment and spacing to those in field 1/5. They had a similar fill containing small flecks and lumps of burnt clay. At the northern edge of the field, the boundary consisted of a hedge bank 1.5m wide and 0.4m high, surmounted by a mature hedge with a large number of tree and shrub species. This boundary was not stripped due to the presence of an ethylene pipeline.

Field 1/7 (NZ 477 265)

The easement crossed the centre of the field from east-south-east, to west-north-west, climbing up and over a small hill. Topsoil and subsoil were similar to the northern half of field 1/6. The crop consisted of long grass. Furrow bases of ridge and furrow were intermittently observed throughout the field on a similar alignment and spacing to that observed in fields 1/5 and 1/6. A rod-handle from a medieval pottery vessel was recovered from the stripped surface on the north-facing slope some 50m from the northern end of the

field. Pottery dating from the 14th and 16th-17th centuries formed the majority of artefacts recovered from this field during the fieldwalking survey and probably derived from the period(s) of usage of the ridge and furrow. The boundary to field 1/8 to the north consisted of a modern post-and-wire fence atop a 1m high north-facing positive lynchet formed of modern, un-leached topsoil. Immediately downslope (within the southern edge of field 1/8) was a 1.2m wide in-filled ditch with a modern dark upper fill.

Field 1/8 (NZ 476 268)

The easement crossed the centre of this field from south-east to north-west, initially sloping up to the north-west, crossing a slight crest and then over fairly level ground to the north-west. The field was under pasture, and had similar subsoil to field 1/7 (mixed yellow and mid-brown boulder clays). Furrows of former ridge and furrow cultivation were observed intermittently throughout the field, on a similar spacing to that in fields 1/5-1/7 but running from north to south at right angles to the previous block. The furrows had a more modern-looking, darker fill, suggesting that the ridge and furrow may have been levelled since the Second World War. The boundary to field 1/9 to the north-west was formed by a low, flat-topped bank 2m wide and 0.3m high, surmounted by a post-and-wire fence and remnants of a hawthorn hedge. Partial topsoil stripping meant that it was not possible to determine whether any ditches had been present. Finds recovered within the field included two worked flints and a fragment of clay tobacco pipe stem.

Field 1/9 (NZ 474 270)

The easement crossed the field from south-east to north-west near its north-eastern end. The field sloped gradually up to the north-west and was under pasture. Topsoil 0.3m thick overlay a mixed or mottled yellowish and reddish brown sandy boulder clay. Within the southern half of the field furrows were observed continuing the pattern observed in field 1/8 to the south. The north-eastern side of the easement had probably been disturbed during construction of an earlier parallel gas pipeline. At the north-western side of the field there was a 0.3m lynchet up into field 1/10, surmounted by a post-and-wire fence and a rather intermittent hawthorn hedge. Stripping was again poor across this boundary but there were probably no in-filled ditches present. A single pottery sherd was recovered.

Field 1/10 (NZ 473 272) To the south of the A689

The easement crossed the field near its north-eastern end from south-east to north-west, terminating at the boundary to the A689 dual-carriageway. The field was fairly level and under pasture. Topsoil 0.2-0.3m thick overlay subsoil similar to that in field 1/9 towards the south-eastern side of the field, gradually changing to reddish brown clayey sand to the north-west. No evidence for ridge and furrow or other archaeological features was noted within the field.

Field 2/1 (NZ 472 274) North of the A689

The easement in this field ran from the A689 north-westwards and then westwards towards the south-eastern corner of field 2/2 across fairly level ground. The subsoil was reddish brown clayey sand. Furrow bases from former ridge and furrow cultivation were observed throughout the field aligned from south-south-east to north-north-west. Towards the south-eastern side of the field these were spaced 4m apart, centre-to-centre, widening to an average of 5m to the north-west and then narrowing again to 4m towards the western side of the field. The individual furrows were only c.1m wide and very shallow and truncated. They contained flecks and small lumps of red burnt clay. A fragment of medieval pottery and a sherd of 16th or 17th century pottery recovered during the fieldwalking phase in this field suggest that the ridge and furrow had a similar period to that in the fields to the south (notably fields 1/3 and 1/7). The boundary at the western side to field 2/2 consisted of a low bank 2m wide and 0.3m high surmounted by a scrubby hawthorn hedge. The bank partially overlay the western furrow within field 2/1 and incorporated the ridge to the west, which stood 0.4m high above the boulder clay natural and 2m wide. It was formed of similar soil to that filling the furrows, including the burnt clay flecks, but leached a slightly lighter brown. The ridge was overlain

by modern topsoil forming the bulk of the above-ground earthwork. A fragment of clay tobacco pipe stem was recovered within field 2/1.

Field 2/2 (NZ 470 275) To the south of the North Burn

The easement entered the field from its south-eastern corner, passing for a short distance to the west before turning to the north-west towards the North Burn stream forming the northern boundary. The field was fairly level to the east, rising slightly to the north-west before dropping down a short slope to the stream. The topsoil was noted to be a slightly darker brown than seen in the fields to the south-east, and carried a crop of oil seed rape. The subsoil was still reddish brown sandy clay, although up-cast from a parallel drainage trench excavated in advance of topsoil stripping suggested that this overlay dark bluish grey clay to the south-east. The pattern and spacing of the ridge and furrow continued unbroken from field 2/1 into the eastern side of field 2/2 for a short distance, but was not identified further to the north-west. The subsoil within the last 10m of the easement was obscured by a thin layer of colluvium, but observation of the pit excavated for directional drilling below the stream did not reveal any additional features or deposits below this.

Field 2/3 (NZ 467 278) To the north of the North Burn

The pipeline was directionally drilled beneath the North Burn at the centre of the south-eastern end of the field. From there the easement ran north-west for a short distance before turning to the west to north-west to run up the centre of the field. The field contained an all-weather horse exercise track, which the easement crossed at the south-eastern edge of the field. The remainder of the field was covered in stubble over c.0.3m of dark brown silty clay topsoil.

At the south-eastern end of the field the subsoil immediately below the topsoil consisted of yellow sand. To the north-east, towards the bend in the easement, this was obscured by a layer of dark reddish brown sandy clay subsoil. Some 50m north-west of the North Burn the easement passed up onto an area of orange-brown gravel in a clayey sand matrix forming a level, slightly raised terrace, overlain to the north-west by a thin layer of colluvium. At a point 200m from the north-western end of the field the land surface again rose slightly out of the alluvial floodplain of the North Burn, the subsoil becoming a reddish brown boulder clay. There was a slight hill-crest at the north-western end of the field, where the boundary to field 2/4 had been removed.

No archaeological features were identified within the floodplain or gravel terrace within the south-eastern half of the field. On the higher ground to the north-west, the surface of the boulder clay was cut by furrow bases of former ridge and furrow cultivation. This was aligned from south-south-east to north-north-west. The furrow bases survived to a width of up to 3m and were spaced at 6m intervals (centre to centre). They were filled with a mid-to dark brown silty sandy clay containing burnt clay flecks. The boundary to field 2/4 had been removed but survived as a slight linear hollow and low bank.

Field 2/4 (NZ 464 279) Centred 400m south-east of Low Burntoft Farm

The easement crossed this field from south-south-east to north-north-west to north-west, with a slight dog-leg at the north-western edge in order to cross a horse exercise track. The field sloped slightly down to the north and was under a crop of wheat. The topsoil at the north-western end of the field became very dark greyish brown sandy silt and contained large quantities of 19th or 20th century domestic rubbish and animal bone, presumably derived from the nearby Low Burntoft Farm. Within the south-eastern c.40m of the field the subsoil continued as reddish-brown boulder clay, possibly re-worked. Downslope to the north-west this changed to purplish-brown sandy clay containing sorted small gravel, then again changed to a yellowish brown ('ginger') coloured sandy clay and gravel. Rather uncertain traces of possible former ridge and furrow cultivation were noted at the extreme north-western end of the field, but the spacing and alignment of this was not determined. Pottery of 13th or 14th century and 16th or 17th century date was recovered during the fieldwalking phase within the

south-eastern part of field 2/3 and from this field, suggesting that the ridge and furrow was in use at a similar date to that in fields to the south-east. A linear crop-mark, probably a former field boundary, recorded during the walkover survey, was not identified during the watching brief. A possible Romano-British potsherd was recovered from the topsoil bund c.70m from the north-western field boundary.

Field 2/5 (NZ 463 281) 250m east of Low Burntoft Farm

The easement crossed the south-eastern boundary of this field near its south-western corner and ran to the north-north-west parallel to its south-western boundary. The north-western boundary to field 2/6 had been removed. The other boundaries were post and wire fencing. The field sloped gently up to the north-west and was under pasture. Up to 0.3m of very dark brown sandy silt topsoil overlay a deposit of poorly sorted, mainly small, gravel in a light brown clayey sand matrix. Insufficient topsoil was removed to determine whether any ridge and furrow (previously recorded by aerial photography) or other archaeological features were present within the field, although a worked flint was recovered.

Field 2/6 (NZ 463 282) 200m east of Low Burntoft Farm

The area continued to slope up, more steeply to the north-west, with the easement running up the south-eastern side of the field and passing into field 2/7 near the north-western corner. Otherwise, the field was similar to field 2/5 (with which it had been combined). Again, insufficient topsoil was removed to determine whether archaeological features were present. The pipeline had been re-routed slightly and passed to the north of a possible medieval boundary bank forming the southern part of the boundary between fields 2/6 and 2/7 which was recorded during the walkover survey.

Field 2/7 (NZ 461 282) To the east of Low Burntoft Farm

The easement entered this field at its north-eastern corner, ran to the north-west adjacent to the north-eastern boundary and exited at its northern corner. The land-form continued to slope up to the north-west. Incomplete stripping of the topsoil prevented identification of any archaeological features. Subsequent monitoring of excavation of the pipe trench (to a depth of 1.5-1.6m) in this field showed that at the south-eastern end of the field the subsoil consisted of bedded gravels. Halfway across the field a purplish-brown boulder clay appeared at the base of the trench and gradually sloped up to the north-west for a short distance. As the trench rose further upslope towards the north-western edge of the field the boulder clay was lost and overlain by a sequence of sands, sandy clays and gravels, generally yellowish-brown in colour. No archaeological features were observed within the pipe trench. At the north-western field boundary there was a slight, stepped lynchet up into field 2/8 but no other barrier.

Field 2/8 (NZ 461 283) To the north of Low Burntoft Farm

The easement crossed the north-eastern end of this field running from south-east to north-west. At the south-eastern side of the field it crossed a hill-crest before running down towards a low point at the boundary to field 2/9. Within the north-western half of the field the area of the easement had been stripped during construction of an earlier gas pipeline, and the new stripping merely revealed backfill of the earlier easement. Subsequent monitoring of the pipe trench within this field showed that the subsoil through most of the field consisted of yellowish-brown sands, sandy clays and gravels as seen in field 2/7. At the north-western side of the field, these dipped below the field boundary and were overlain by a sequence of fine yellow, brown and grey clays with a lens of black peaty silt centred c.10m to the north-west within field 2/9. This feature presumably represented a natural post-glacial pond. No archaeological features were identified within field 2/8.

Field 2/9 (NZ 458 284) Centred 250m to the north-west of Low Burntoft Farm

The easement crossed this field from east-south-east to west-north-west. The line of the easement sloped up to the west for a short distance, then crested and sloped gently down, with undulations, to the north-west, with a distinct dip down to the boundary with field 2/10. More generally, the field sloped steeply up to the south-west with the easement crossing near the

base of the slope. Near the hillcrest at the top of the slope, the south-western field boundary was marked by a major (c.1.5m high) active negative lynchet, whilst a major positive lynchet at the downslope (north-eastern) side of the field showed that significant colluviation has occurred (and is still occurring) down the slope. The topsoil stripping of the easement demonstrated that disturbance from the earlier parallel pipeline continued for c.20m into the south-eastern side of the field. Below this disturbance was the in-filled natural pond recorded in field 2/9 above. To the north-west of this the small hillcrest was formed of fine gravel in a silty sand matrix, overlain downslope to the north-west by varying thicknesses of colluvium. Within the dip to the boundary with field 2/10 this was replaced by more reduced clays, possibly another in-filled post-glacial pond, overlain by up to 0.5m of colluvium. Due to the primarily gravel subsoils the topsoil within this field was typically a very dark sandy silt. The boundary to field 2/10 to the north-west was formed by a hedge but with no sign of a bank or lynchet.

Field 2/10 (NZ 455 286)

The easement crossed this field from east to west (slightly south-east to north-west). Overall, the field sloped down to the north, although the route of the easement took it up a short steep slope from the boundary with field 2/9, then up a long, gradual slope to the west before dropping steeply down towards the stream forming the north-western field boundary. Topsoil stripping showed that the steep slope at the south-eastern side of the field was masked by colluvium. At the eastern end of the gentler slope, the subsoil was a mixture of areas of reddish brown clay, yellow clay and gravelly clay. Further to the west this was masked by a layer of mid-brown sandy clay flecked with burnt clay similar to the fill of ridge and furrow seen elsewhere, with tentative identification of furrows aligned from south-west to north-east. These were seen more clearly where the field sloped down towards the western end, where they survived up to 1.5m wide but only 0.10m deep with a spacing of 5m (centre to centre). The western 30m of the easement was masked by colluvium, which the pipe trench showed to be 0.3m thick and which produced a sherd of medieval pottery. The boundary to field 2/12 to the north-west was formed by a small ditched stream, flanked by mature hedges which had grown up over the stream forming an 'arch'. Brief monitoring during cutting of the stream-crossing suggested that the ditch containing the stream had been cut into a c.6m wide deposit of layered mid-to dark grey clays and silty clays, although no close examination was possible. This presumably represented the original channel of the stream, which may have been canalised.

Field 2/11 (NZ 454 287)

The pipeline was re-routed and did not enter this field.

Field 2/12 (NZ 452 287) At the east side of the A19 c.400m south of Stotfold Crest

The easement entered this field at its south-eastern corner and ran north-east towards the A19 embankment which formed the western field boundary. The field overall sloped gradually up to the north and was under a crop of wheat. At the south-eastern side of the field, past the alluvial deposits associated with the stream (see field 2/10), a thin layer of mid-to dark brown sandy clay colluvium overlay a mid-brown silty clayey sand and gravel subsoil, overlain in places to the south-east by patches of mid-grey clay probably derived from alluvial activity. Towards the western side of the field the pipe trench, which was 1.55m deep, showed that 0.3m of colluvium overlay 0.5m of mixed gravel and yellowish brown sandy clay, which in turn overlay reddish brown boulder clay. These deposits were heavily scored modern ploughing. No archaeological features were identified in this field.

Field 3/1 (NZ 450 288) At the west side of the A19, 400m south-east of Gunnersvale Farm

The easement in this field started at the western side of the A19 embankment (under which the pipeline was directionally drilled) and ran north to north-west so as to align the pipeline behind the petrol station lying within the eastern end of field 3/2 to the north. The field sloped fairly steeply up to the north, then crested and dropped down gradually towards its northern boundary. The subsoil revealed by topsoil stripping consisted of yellow sandy clay, which

changed to the north to very mixed, stony, yellowish brown, brown and reddish brown sandy boulder clay. A rather uncertain pattern of possible furrows from former ridge and furrow cultivation was observed, aligned from north to south and spaced at c.5m intervals, but this was very intermittent and masked (and perhaps even caused) by a parallel modern plough-trend. The northern boundary to field 3/2 was marked by a slight lynchet down into 3/2 surmounted by a modern hawthorn hedge. Six pottery sherds were recovered, mainly near the southern end of this section of easement.

Field 3/2 (NZ 449 290) At the west side of the A19, 150m south-east of Gunnersvale Farm This field occupied a flat, low-lying area which the easement crossed from south to north. The subsoil was mixed or mottled mid-yellowish brown and mid-grey sandy clays, reflecting the low-lying, probably seasonally water-logged, situation. No archaeological features were identified but two pottery sherds were recovered. The field boundary to the north was marked by a lynchet up to the trackway running from the A19 to Gunnersvale Farm, bounded to the south (to field 3/2) by a wooden post-and-rail fence and to the north (to field 3/3) by a rather intermittent modern hawthorn hedge.

Field 3/3 (NZ 449 293) At the west side of the A19, immediately north of Gunnersvale Farm The easement crossed this field from south to north. The land sloped up to the north within the area of the easement, and more generally down to the southwest. Between 0.30m and 0.35m of topsoil under a wheat crop covered a subsoil of rather mixed yellowish brown, brown and reddish brown stony, sandy boulder clays. This was sealed in places by patches of mid-brown sandy clay interpreted as a buried ploughsoil. Towards the southern end of the field part of this layer appeared to be the fill of a relict furrow running from south to north (on a similar alignment to the ridge-and furrow in field 3/1). Aerial photographs show that there was formerly earthwork ridge and furrow within the western half of the field. Dusty conditions during stripping meant that pottery was only recovered after heavy rain, and the fact that all six of the sherds recovered had orange fabric suggested that other material might have been missed in the mud. The field boundary to the north consisted of a hedge, with no flanking ditches visible (although a silted ditch was recorded during the walkover survey).

Field 3/4 (NZ 448 296) At the west side of the A19, 400m north of Gunnersvale Farm The easement crossed this field from south to north. The southern half of the field was fairly level, then the easement ran down a short, steep slope to a relatively level area at the northern end. The field was under a crop of wheat. Removal of the topsoil revealed a c.0.3m thick layer of moderately stony mid-brown sandy clay interpreted as a buried ploughsoil above very mixed reddish brown boulder clay similar to that in field 3/3. At the low-lying northern end of the field and continuing into field 3/5 to the north monitoring of the pipe trench showed that the clays gave way to loose sands and gravels, although extensive collapse of the trench prevented observation of the relationship between the two. No archaeological features were identified within field 3/4. The boundary to field 3/5 to the north consisted of an intermittent hawthorn hedge and post-and-rail fence.

Field 3/5 (NZ 449 298) At the west side of the A19, 300m south of High Stotfold The easement crossed this field from south to north. The topography sloped gradually up to the north, except at the northern end where it sloped steeply down towards the stream forming the boundary to field 3/6. The field was under a crop of wheat. Removal of the topsoil revealed a layer of mid-brown buried ploughsoil. This was generally c.0.3m thick, but where the stream downslope to the north had cut through this deposit it was more than 1.0m in thickness and increasingly lighter in colour with depth, suggesting that it had accumulated over a considerable period of time. As noted above (field 3/4), the subsoil at the southern end of the field was loose sands and gravels. This was rapidly replaced upslope to the north by the very mixed reddish brown boulder clay seen in the fields to the south. The northern field boundary was formed by a hedge on top of a substantial positive lynchet formed from the buried ploughsoil (see above). To the north of this, the stream appeared to cut directly into bolder clay, with no associated alluvial deposits identified.

Field 3/6 (NZ 448 300) Located immediately south of High Stotfold

After crossing the stream forming the southern boundary, the easement turned slightly to cross this field from south-east to north-west. The field sloped fairly steeply up to the north-east, and was under pasture retaining upstanding earthwork remains of ridge and furrow cultivation aligned from north-north-east to south-south-west. The topsoil over the ridges consisted of dark brown silty clayey sand. This was almost totally stone-free, suggesting that the field had been under pasture for a very long time. The ridges were spaced 6-7m apart (centre to centre) and survived to a height of 0.3-0.4m within the easement. After topsoil stripping the furrows could be seen to be filled with mid-brown silty sandy clay with occasional small rounded pebbles. The ridges were formed of much stonier, slightly reddish brown sandy clay more closely resembling the underlying boulder clay. 'Benching' of the western side of the easement showed that the buried ploughsoil was more than 0.4m thick along the easement centreline within the southern half of the field, although it apparently thinned to the north-west, where the toothed bucket of the machine began to bring up lumps of clean boulder clay. Monitoring of the pipe trench in this area (1.5m deep after 'benching') confirmed that the subsoil was brown boulder clay. Due to the action of the trenching machine smearing the trench sides it was not possible to observe the ridge and furrow in section. Twenty-four, mostly medieval, pottery sherds and a fragment of clay tobacco pipe stem were recovered during topsoil stripping. The boundary to field 3/7 to the north-west was formed by a hedge, with no evidence for any flanking ditches.

Field 3/7 (NZ 447 301) Located immediately south-west of High Stotfold

The easement crossed the north-eastern end of the field from south-east to north-west. The field sloped gradually up to the north-west in the area of the easement and more generally down towards the stream to the south-west. It was under pasture and retained earthwork remains of ridge and furrow cultivation aligned from north-north-east to south-south-west. The topsoil, buried soils, subsoil and ridge and furrow were generally similar to that recorded in field 3/6. Monitoring of cutting of the pipe trench through the area showed that, after a small amount of 'benching' resulting in c.0.2-0.3m of truncation, the buried soil survived to a thickness of up to 0.5m, filling furrows cutting up to 0.3m into the underlying boulder clay, although the form of the furrows could not be determined due to the action of the trenching machine. Twenty-five, primarily medieval, pottery sherds and two fragments of clay tobacco pipe stem were recovered from the field. The northern boundary was formed by a fenced trackway leading westwards from High Stotfold.

Field 3/8 (NZ 446 302) Located immediately west of High Stotfold

The easement within this field, which crossed it from south-east to north-west, had been stripped prior to the watching brief as part of the archaeological trial trenching Site 1 (NAA 2004). Outside the fenced easement the field was relatively level, under pasture and retained earthwork remains of former ridge and furrow cultivation aligned from north-north-east to south-south-west. Within the easement, the undulating surface of the stripped ridge and furrow resembled that seen within fields 3/6 and 3/7 to the south. Monitoring of the pipe trench through this area showed that up to 0.4m of buried soil overlay brown boulder clay. Smearing of the trench sides by the trenching machine served to mask any archaeological features, but clay bands on a similar spacing to the ridge and furrow probably represented the location of furrow bases cutting into the subsoil. Eighteen pottery sherds, predominantly medieval in date, were recovered after topsoil stripping. The boundary at the northern side of the field was formed by a trackway running from High Stotfold to the north-west, recorded on the 1839 tithe map as a 'carriage road'. The track was not trenched and hence it was not determined whether it had been flanked by ditches.

Field 3/9 (NZ 446 305) Located 150m north-west of High Stotfold

From the trackway-crossing at its southern end, the easement ran northwards across this field which was under pasture. The field rose up a short steep slope at its southern end, then ran down a gentle slope to the north before rising again towards the northern boundary to field 3/10. Removal of the dark brown silty sandy clay topsoil revealed a buried mid-brown

ploughsoil horizon across the whole field. Monitoring of the pipe trench suggested that this was 0.3-0.6m thick within the southern half of the field and 0.2-0.4m thick to the north. No ridge and furrow or other archaeological features were identified although two pottery sherds were recovered. The boundary to field 3/10 to the north consisted of a mature hedge with an open ditch at the northern side. No hedge-bank was present. This boundary was not trenched and hence it was uncertain whether there had been a ditch at the southern side.

Field 3/10 (NZ 445 309) Located 600m north to north-west of High Stotfold

The easement crossed this field from south to north towards its northern corner. The ground sloped up gradually to the north with some slight undulation and the field was under a crop of oil seed rape. Below the topsoil most of the area was covered by a 0.05-0.20m, occasionally up to 0.30m, thick mid-brown buried ploughsoil horizon. The subsoil below this was brown boulder clay, becoming progressively stonier to the north. A pit excavated for directional drilling near the northern end of the field showed this to be more than 5m thick. Another pit close to the northern boundary showed a sequence of reduced (grey) gravels more than 3m thick, but the excavated area was too restricted to show their relationship to the boulder clay to the south and at the extreme northern end of the field by the boundary. After topsoil stripping, five pottery sherds were recovered from the easement. The northern field boundary to field 3/11 was formed by a mature hedge, predominantly hawthorn, atop a very slight bank with a slight lynchet down to the north into field 3/11. Immediately to the north the surface topography suggested the presence of a slight ditch but this was not apparent after topsoil stripping. The boundary was directionally drilled due to the presence of two water mains and hence no further details could be obtained from the pipe trench.

Field 3/11 (NZ 444 313) 600m south-east of Stotfold Moor

The easement crossed the eastern edge of this field from south-south-east to north-north-west. The field was fairly level, sloping very gradually up to the north, and was under a crop of wheat. Below the topsoil a 0.10-0.30m thick layer of mid-brown sandy clay, interpreted as a buried soil, occurred through the easement. This overlay brown boulder clay containing some lighter brown and yellow lenses which extended to the base of the 1.5m deep pipe trench. No archaeological features were observed within this field. The boundary to field 3/12 to the north consisted of a rather intermittent hawthorn hedge with a small open ditch on the southern (field 3/11) side. This boundary was not cut by the pipe trench at the time of monitoring.

Field 3/12 (NZ 443 316) 600m east of Stotfold Moor

The easement crossed the eastern end of this field from south-south-east to north-north-west. The field sloped very gradually up to the north and was under a crop of wheat. Below the topsoil, the sequence of deposits within the southern half of the field was similar to that within field 3/11, with the buried soil layer gradually thinning and tailing-off to the north. Within the northern half of the field, topsoil directly overlay a very stony mid-brown sandy boulder clay. This was cut by furrow bases of former ridge and furrow cultivation filled with friable, moderately stony, slightly yellowish mid-brown clayey sand soil. The furrows were aligned from north to south and spaced 5-6m apart (centre to centre), with the alternating bands of fill and boulder clay each c.3m wide. No other archaeological features were noted. The northern boundary to field 3/13 consisted of a line of small hawthorn trees representing a grown-out former hedge. These surmounted a flat-topped bank 2m wide and 0.5m high, flanked on its northern side (in field 3/13) by an open ditch 2m wide and 0.8m deep.

Field 3/13 (NZ 442 319) At the south side of Coal Lane, 200m south-east of High Farm

The easement within this field ran to the north to north-west near its western end, dog-legged for a short distance to the north-west below two overhead power-lines and then continued to the north to north-west to the boundary with Coal Lane. The field sloped very gradually up to the north and was under a crop of oil seed rape. Fieldwalking had identified a concentration of pottery ranging from the mid-12th to 17th centuries in date within this field (Site 2). Geophysical survey identified a pattern of former ridge and furrow cultivation and possible

areas of burning. Excavation of a series of trial trenches identified one area of ridge and furrow but no occupation-type features, suggesting that the fieldwalking finds related to manuring activity associated with use of the ridge and furrow rather than the presence of domestic activity (NAA 2004). The watching brief showed that below the topsoil, the mid-brown stony sandy boulder clay subsoil was cut by furrows of former ridge and furrow cultivation aligned from north to south approximately parallel to the nearby western field boundary. The furrows were 1.0-1.5m wide and spaced 5-6m apart (centre to centre). Within the northern 100m of the field, these were masked by a layer of mid-brown buried ploughsoil. Ridge and furrow had previously been recorded in adjacent fields to the east and to the north of Coal Lane (possibly levelled in 1941 – see field 4/1 below), but not in this field. Eight pottery sherds and a fragment of clay tobacco pipe stem were recovered during the watching brief in this field. At the northern edge of the field, the boundary to Coal Lane comprised a hedge and fence with no surface evidence for ditches, and the pipe was directionally drilled beneath the road preventing further observation.

Field 4/1 (NZ 440 322) Located immediately east of Green Acres Farm at the north side of Coal Lane

The easement crossed the field from south-east to north-west. The field sloped gently up from Coal Lane to a hill-crest at the boundary to field 4/2, and was under pasture. There was a hedge and fence at the southern boundary to Coal Lane. Topsoil stripping revealed that the subsoil comprised a yellowish brown sandy clay containing occasional small stones. Downslope, towards the southern side of the field, this was obscured by areas of a buried ploughsoil. Upslope, the subsoil was cut by the furrows of former ridge and furrow cultivation aligned from north to south parallel to the north-western field boundary. The furrows were individually up to 1.5m wide and spaced 4.5-5.5m apart (centre to centre). The pattern was observed to continue uninterrupted into field 4/2, so that the existing boundary ran on top of one of the ridges. The farmer of fields 4/1 and 4/2 could recall that some of the nearby fields had been first taken into arable in 1941, destroying ridge and furrow, but was sure that none had been visible as upstanding earthworks within fields 4/1 and 4/2 at that date. The north-western boundary of field 4/1 to field 4/2 was marked in the area of the easement by a post-and-rail fence, although immediately to the east of the easement was a mature hedge on a very slight bank. There was a modern track-way at the northern side of the boundary which overlay a former ditch which was 1.5m wide and in-filled with brick rubble during the 20th century.

Field 4/2 (NZ 438 323) Located immediately east of Beacon Hill Farm

The easement crossed the field from south-east to north-west, passing immediately to the east of the poultry houses at Beacon Hill Farm. The field sloped down towards the stream at the north-western side forming the boundary to field 4/3. The field was under pasture and the 0.20-0.25m thick topsoil was a mid-to dark brown silty sandy clay with rare small rounded stones and occasional fragments of 19th or 20th century pottery and other contemporary artefacts (not retained). The pattern of furrows from former ridge and furrow cultivation continued from field 4/1 as noted above. Within field 4/2 the spacing varied from 6.0m down to as little as 3.0m. The stream forming the north-western field boundary cut across this pattern and was therefore probably canalised. It retained patchy remnants of hedges along both banks, with an additional post-and-wire fence to the south.

Field 4/3 (NZ 437 325) Located immediately north of Beacon Hill Farm

The easement crossed the field from south-east to north-west. The field was under pasture. Adjacent to the stream at the south-eastern boundary the southern half of the field was a fairly level former floodplain, the northern half of the field then sloping up to the north. The subsoil was a brown boulder clay overlain within the southern half of the field by a greyish brown clay, presumably alluvial in origin, which thickened to the south so that near the stream it was more than 1.0m thick. Above this deposit, and appearing in patches to the north, were deposits of a thin (<0.10m) buried ploughsoil. No evidence for former ridge and furrow agriculture or other archaeological features were observed. The boundary to field 4/4 to the

north-west was formed by a bank 2m wide and 0.5m high surmounted by remnants of an old hawthorn hedge. This boundary was not stripped due to the presence of a water main.

Field 4/4 (NZ 436 326) c.300m north-west of Beacon Hill Farm

The easement crossed the field, which was under pasture, from south-east to north-west. The route sloped gently down for c.30m from the southern boundary into a shallow hollow, then more steeply up to the north. Subsoil was a mid-yellowish brown sandy boulder clay, masked for a short distance within the base of the dip by a deposit of mid-brown colluvium. No archaeological features were identified. The boundary at the northern side of the field to field 4/5 was formed by a substantial 1.0m high negative south-facing lynchet, surmounted by a hawthorn hedge with a post-and-wire fence on the southern side. There was no evidence of any associated ditch, although on the northern side it would have been masked by colluvium (see below).

Field 4/5 (NZ 436 327) 300m south-west of Cotsfold Close Farm

The easement in this field continued to slope fairly steeply up to the north-west. The topsoil consisted of a 0.20-0.25m thickness of mid-to dark brown clayey sandy silt. The subsoil consisted of areas of mid-yellow brown sandy clay, reddish brown sandy clay and mixed clayey sand and unsorted gravel. There was some evidence of colluviation downslope to the south. No archaeological features were identified. The northern boundary to field 4/6 consisted of a slight bank with a c.0.3m high south-facing negative lynchet, surmounted by a hawthorn hedge.

Field 4/6 (NZ 435 328) 250m west of Cotsfold Close Farm

The easement continued to slope up to the north-west within this field, crossed a hill-crest and then sloped down towards the northern boundary. The field was under wheat. Typically, 0.25m of topsoil overlay subsoil consisting of yellowish or orangey brown clayey sand containing occasional patches of gravel or reddish brown clay. No archaeological features were identified. The northern boundary was open onto a track way running eastwards towards Cotsfold Close Farm.

Fields 4/7 and 4/8a (NZ 434 330) 250m east of Pudding Poke Farm

The route across this area had been slightly re-aligned eastwards area so that it passed through the field immediately to the east of field 4/8 within the Desktop Assessment, designated field 4/8a. In addition, the boundary between fields 4/7 and 4/8a had been removed. The route crossed these fields from near the centre of the southern side of field 4/7 north-westwards towards the north-western corner of field 4/8a.

At the southern side of field 4/7, the boundary on the northern side of the track way to Cotsfold Close Farm consisted of a hedge incorporating mature trees. This surmounted a substantial, c.1.5m high north-facing negative lynchet. The field below the lynchet sloped steeply down to the north to a low-lying level area within the northern side of field 4/7 and through field 4/8a. Both fields were under a crop of wheat. At the southern edge of field 4/7, 0.15-0.30m of modern ploughsoil overlay reddish or yellowish brown, slightly stony clayey sand subsoil. Down the slope this was generally obscured by colluvium derived from the lynchet, although a similar subsoil was intermittently visible. The subsoil within the lower-lying area to the north (the lowest point within the visible landscape) was generally a mid-to dark brown water-laid clay mottled with yellowish brown sandy clay. Within the pipe trench this was shown to be up to 1.40m thick, overlying more than 0.2m of grey clay. In the northern part of field 4/8a, very layered and clearly water-laid deposits of grey and brown clays were observed. Within the last c.8m of the corridor at the northern end of field 4/8a sandier subsoil started to re-appear. No archaeological features were observed in either field. The northern boundary of field 4/8a was formed by a c.1m high causeway carrying the roadway westwards to Pudding Poke Farm.

Field 4/9 (NZ 431 333) Located immediately north and north-east of Pudding Poke Farm

The southern field boundary was formed by the road embankment running westwards towards Pudding Poke Farm. The easement crossed the field from south-east to north-west. The field was under a crop of wheat and sloped up to the north. Within the lower-lying ground at the southern end the water-laid-brown clay observed within field 4/8a continued for a short distance, then the underlying mixed gravels and yellowish and orangey brown sandy boulder clays rose up to form the subsoil up the slope to the north. It was seen within the pipe trench to be more than 1.5m thick. No archaeological features were identified within this field. The northern boundary to field 4/10 was formed by a substantial mature hedge running on top of a bank 2.5m wide and 0.6m high. Before stripping there appeared to be a slight ditch to the north, but excavation of the pipe trench demonstrated that there had never been a ditch associated with this boundary.

Field 4/10 (NZ 430 334) 300m north of Pudding Poke Farm

The easement in this area continued to slope generally up to the north-west, although with a distinct dip near the centre of the field. The field was under a crop of barley. The subsoil was mid-orangey brown slightly clayey sand with occasional patches of brown boulder clay, mainly concentrated to the south-east. Within the dip at the centre of the field this was masked for 20m by a thin layer of a modern-looking buried soil. Topsoil stripping was of sufficient quality to be fairly sure that there was no evidence for ridge and furrow or other archaeological features within the easement within most of this field. A single feature was identified at the north-western end (see field 4/11 below). The boundary at the northern side of the field was formed by a post-and-rail fence with remnants of a fairly modern hawthorn hedge on the northern side.

Field 4/11 (NZ 429 336) At the south side of Burn Road, c.500m north of pudding Poke Farm

The desk-top study identified a pattern of low earthwork ridge and furrow throughout this field, aligned from north-east to south-west parallel to a relict field boundary represented by a hedge bank with mature trees which had formerly divided-off the north-western part of the area. Two parallel silted ditches were observed within the northern area, running from north-west to south-east cutting across the pattern of ridge and furrow. This group of earthworks had been designated Site 3 and was the subject of an earthwork survey (NAA 2004).

The stripped easement crossed the field from south-east to north-west, approximately at right angles to the alignment of the ridge and furrow. The presence of the previously recorded earthwork ridge and furrow was confirmed before topsoil stripping. The field, which was under pasture, sloped gently down from the southern boundary before gradually rising again to the north-west. The subsoil throughout the area consisted of mid-yellowish brown boulder clay. Where the easement entered the south-eastern end of the field, this showed as a pronounced band 2m wide at the centre of the stripped area, aligned from east-south-east to west-north-west and flanked to either side by a buried ploughsoil deposit. The band of subsoil was traced for a short distance to the south-east back into field 4/10 before passing below a topsoil bund. To the north-west it passed beyond the stripped easement 42m into the field and could tentatively be seen as a slight north-east facing lynchet running as far as the earthwork relict field boundary within the north-western corner of the field, over a distance of some 200m. The pattern of earthwork ridge and furrow could not be identified cutting the subsoil in the south-eastern part of the field. Instead, the buried feature described above seemed to form the south-western limit of a pattern of furrows running from east-south-east to west-north-west. These survived as 2m wide bands of disturbed, 'dirty' subsoil spaced 5m apart (centre to centre). As the field sloped down to the north-west these were obscured by a layer of buried ploughsoil.

As the field rose again to the north-west, the buried soil ran out and removal of topsoil revealed clean yellowish brown subsoil with no evidence for furrows (despite being overlain by earthwork remains), suggesting that neither the earthworks nor the buried phase of ridge and furrow had originally been very substantial.

Where the relict field boundary crossed the easement, there was a 1.5m wide band of light brown leached soil beneath the former hedge-bank with a 2m wide in-filled ditch at the northern side.

Beyond the relict field boundary, within the north-western part of the field, another sequence of furrows were observed cutting the subsoil. These were on a slightly different alignment to the southern group, running from south-east to north-west almost directly along the easement and parallel to the two silted ditches noted in the desk-top study. They were spaced 5m apart, centre to centre.

The phase of ridge and furrow identified cutting into subsoil was clearly earlier than that surviving as earthworks. The silted ditches forming part of the northern group were suggestive of medieval strip fields, while the larger fields and surviving portion of relict boundary associated with the later pattern were more suggestive of post-medieval activity. No artefacts were recovered in association with either phase.

The north-western edge of the field was bounded by Burn Road which was flanked by hedges. The road-crossing had been prepared in advance of the watching brief, and hence it was not possible to determine whether either hedge had been associated with in-filled ditches.

Field 5/1 (NZ 426 339) At the north side of Burn Road, 700m south-east of Wood Close Farm)

The easement crossed the field near its south-western end, running to the north-west from Burn Road. The field was fairly level, sloping up at the north-western side, and was under a crop of wheat. The first 30m at the south-eastern end had been stripped for a compound area prior to the watching brief. Elsewhere, 0.20-0.25m of clayey topsoil overlay yellowish brown sandy boulder clay more than 1.5m thick. The topsoil was not fully stripped in this field and this hampered recognition of archaeological features. However, within the central part of the easement the subsoil was almost certainly cut by furrows from former ridge and furrow cultivation. These were aligned from north-north-west to south-south-east approximately parallel to the western boundary of field 5/2 to the north. Where visible they were typically 2m wide, filled with mid-brown sandy clay and were spaced c.12m apart (centre to centre), although it was likely that there were intermediate unseen furrows. The subsoil within a 20m length of the easement at the base of the slope to the north-west was obscured by colluvium, but upslope more furrows were observed on a spacing of c.7m (centre to centre). The boundary at the north-western side of the field was marked by a 0.5m southeast-facing lynchet surmounted by a hawthorn hedge and post-and-rail fence. Sectioning of this boundary showed that the 'lynchet' was actually a low hedge bank 2.0m wide and 0.5m high with modern ploughsoil collected against its north-western (upslope) side. Monitoring of the pipe trench confirmed that the bank had never been ditched.

Field 5/2 (NZ 424 341) c.400m south-east of Wood Close Farm

The easement crossed this field from south-east to north-west. It ran upslope briefly before crossing a hillcrest and running gradually down towards the boundary with field 5/3. Below a crop of wheat there was 0.25-0.30m of an almost stone-free dark brown slightly sandy silty clay ploughsoil. The subsoil was yellowish brown slightly sandy boulder clay more than 1.5m thick, its upper surface heavily scored by modern ploughing. Downslope towards the north-western side of the field, where there had been less truncation of the subsoil surface by modern ploughing, several furrows from former ridge and furrow cultivation were observed filled with a mid-to dark brown sandy clay soil. They were typically 1.0m wide, spaced 7m apart (centre to centre) and aligned from north-north-west to south-south-east parallel to the western field boundary.

The boundary at the western side of field 5/2 was formed by a 22m wide band of mature woodland which the pipeline crossed by directional drilling. At the western side of field 5/2 there was a slight bank or lynchet 2m wide and dropping 0.5m down to the west, surmounted

by remnants of a hedge and with a rather uncertain possible ditch hollow to the west. This area was not stripped due to the presence of a water main. The central part of the wooded band was level, bounded to the west by a recently-silted 1m wide ditch and then a 2.5m wide by 0.7m high bank surmounted by a mature hawthorn hedge forming the eastern boundary of field 5/3. The primary tree planting or colonisation seemed to have derived from the two boundary hedges. Numerous tree species were present but conifers appeared to be restricted to the central part of the area and were presumably the latest colonists. The wooded area appeared to represent an overgrown green lane or drove-way extending to the south-east to Burn Road.

Field 5/3 (NZ 422 342) 150m south-east of Wood Close Farm

The easement crossed this area sloping gradually down from east-south-east to west-north-west and was under a crop of barley. The topsoil and subsoil were similar to those within field 5/2, the boulder clay extending to the full depth of the pipe trench (1.5m). No archaeological features were identified. The boundary at the western side to field 5/4 consisted of a simple post-and-wire fence.

Field 5/4 (NZ 421 342) c.100m south of Wood Close Farm

The easement crossed the northern corner of the field continuing to run gradually downslope to the west to north-west. The field was under pasture. The surface of the subsoil became progressively more gravely then sandy to the west, with correspondingly sandier topsoil, although monitoring of the pipe trench showed brown boulder clay throughout. No archaeological features were identified. The boundary to field 5/5 to the north-west consisted of a substantial north-west facing negative lynchet 1.5m high at the northern side of the easement but gradually diminishing to the south-west. It was surmounted by a post-and-wire fence and discrete hawthorn bushes probably representing remnants of a former hedge. The sides of the pipe trench across this boundary were badly smeared but there did not appear to have been any in-filled ditches.

Field 5/5 (NZ 420 342) Immediately south of Wood Close Farm

The field continued to slope down to the west to north-west below the lynchet forming the south-eastern boundary, and was under pasture. The base of the lynchet was filled below topsoil with a 5m wide spread of dumped coal ash and soot mixed with 19th or early 20th century domestic rubbish (presumably derived from the nearby farm) and pantile fragments. The remainder of the easement within this field was masked by a buried soil layer except for a 4m wide band adjacent to the north-western boundary which had been previously been stripped to insert a stoned agricultural access across the easement. Because of these masking deposits no archaeological features were identified. Subsequent monitoring of the pipe trench showed that the subsoil within this area was brown boulder clay, despite it forming part of the same low-lying area as field 5/6 to the north-west (see below). This suggests that the valley within which both fields lay was glacial in origin with activity relating to the extant post-glacial water course represented by the ditch at the western side of field 5/6 having been restricted to the western side of the valley floor. The north-western boundary to field 5/6 was formed by a 2m wide by 0.3m high bank surmounted by a somewhat intermittent hawthorn hedge and a post-and-wire fence.

Field 5/6 (NZ 420 343) Immediately west of Wood Close Farm

The easement crossed the field from east-south-east to west-north-west. The crossing below the track at the eastern end of the field had not been cut at the time of monitoring, and no additional details of the boundary were recovered. The field sloped gradually and then very steeply up to the west. At the eastern edge of the field for c.15m a yellowish brown slightly clayey sand subsoil was observed. The pipe trench in this area was 2.5m deep, showing that this deposit was 1.25m thick, overlying grey or greyish brown alluvial clays. To the west these deposits were obscured by a buried colluvial soil except up the steep slope at the western side of the field where the subsoil was a fine mid-grey clay interspersed with lenses of very fine orangey brown rounded sand. For the last 10m at the western side of the field this

was obscured by a layer of mid-brown sandy clay with occasional small stones. Monitoring of the pipe trench showed that the grey alluvial clays continued westwards right back into the base of the slope, which had originally been considerably steeper, presumably cut by the stream, and then buried by colluvial deposits. The western field boundary consisted of a 0.3m high east-facing negative lynchet (looking like a 2m wide bank) surmounted by a substantial mature hedge containing only a limited number of tree species. At the western side was a 1m wide and 0.5m deep active ditch. On the western side of this ditch was another 0.9m high east-facing negative lynchet cutting into boulder clay within field 5/7.

Field 5/7 (NZ 418 343) 250m west of Wood Close Farm

The easement continued to slope up across this field to the west to north-west. The field was under pasture. The subsoil throughout the field consisted of mid-yellowish brown sandy boulder clay. Beginning c.12m from the top of the lynchet at the eastern boundary was a sequence of furrows from former ridge and furrow cultivation, spaced at intervals of 8m (centre to centre). These ran from north-north-east to south-south-west parallel to the eastern and western field boundaries. Individual furrows were 0.8-2.0m wide except one 36m from the eastern lynchet which was 6m wide (with its southern edge in the expected position within the pattern). The western field boundary occurred at the break of slope at the top of the east-facing hill slope and consisted of a 1.5m wide and 0.4m high bank surmounted by a small hawthorn hedge with a post-and-wire fence on the western side. The topsoil was not completely stripped in this area and as a consequence it was impossible to determine whether in-filled ditches were present.

Field 5/8 (NZ 417 344) Located immediately south of Catlow Hall Farm

The easement crossed this field towards the west to north-west, with a slight dog-leg northwards near the western end in order to pass below overhead power-lines. The field, which was under pasture, was level at the eastern side, then sloped gently down to the west before rising slightly at the western side. The subsoil throughout was a mid-brown sandy clay mottled mid-grey in places. Truncated furrows (typically only 0.8m wide) cut into the subsoil at a pacing of 5m (centre to centre) and aligned from north-north-east to south-south-west parallel to the eastern and western field boundaries. They were filled with mid-brown sandy clay and were observed across the width of the field. The western field boundary consisted of a 0.3m high east-facing negative lynchet surmounted by a hawthorn hedge and post-and-rail fence.

Field 5/9 (NZ 415 345) Located immediately south-west of Catlow Hall Farm

The easement crossed the field from south-east to north-west. It sloped upwards for a short distance to the north-west and then gradually down towards the boundary with field 5/10. The subsoil was yellowish brown boulder clay for the first c.80m, changing to a mid-brownish yellow glacial sand over the hill crest and then back to boulder clay downslope to the north-west. Furrows representing former ridge and furrow cultivation were recorded cutting the clay within the south-eastern part of the field, then intermittently over the hillcrest and downslope to the west due to increased truncation. The furrows were aligned from north-north-east to south-south-west parallel to the eastern and part of the western field boundaries and parallel to those in fields 5/7 and 5/8 to the east and field 5/10 to the west. They were spaced 5m apart (centre to centre) and were typically 1m wide.

A possible hollow way noted within the desktop study at the western end of the field appeared after topsoil stripping as a 4.5m wide band of topsoil containing c.30% small rounded gravel and fragments of brick, tile and glazed drainage pipe, and was aligned so as to follow the eastern side of the boundary to field 5/10 to the south of the easement, diverging from it to the north where the field boundary turned to the north-west, and hence parallel to the ridge and furrow. The boundary to the south of the easement consisted of an old hedge, whilst the section aligned to the north-west consisted of a post-and-wire fence and was clearly of modern origin. The western side of the 'hollow way' fill was fringed by what appeared to be

furrow fill, beginning the pattern of ridge and furrow observed in field 5/10 to the west (see below).

Field 5/10 (NZ 413 347) c.300m west of Catlow Hall Farm

The easement within this field sloped up to the north-west. The field was under pasture. The subsoil was a pebbly mid-yellowish brown clayey sand with some gravelly patches increasing in frequency upslope to the north-west. The field was formerly called Gravel Hill, and a disused tip, presumably a former gravel pit, lies within the adjacent field at the northern side of Catlow Hall Farm. Furrows from former ridge and furrow cultivation were intermittently observed across this field, aligned from north-north-east to south-south-west parallel to those within fields 5/7 – 5/9 to the east. They were spaced 5m apart (centre to centre) and up to 1.2m wide. The western field boundary was formed by a slight (0.2m high) bank surmounted by the remnants of an old hedge with occasional mature trees and large tree stumps. There was a possible slight ditch hollow at the western side, then a 3m wide gravelled trackway leading to Black Hurworth.

Field 5/11 (NZ 412 348) Located immediately south of Hart Bushes Hall

The easement continued to the north-west across the centre of this field, which was under a crop of wheat. The ground was undulating before dropping down more steeply towards the north-western boundary. Within the eastern c.130m of the field, 0.2-0.3m of dark brown sandy clay topsoil overlay unsorted glacial gravels in a light to mid-brown clayey sand matrix with patches of pinkish brown clay and intermittently overlain by lenses of a mid-brown clayey sand buried soil. The land then dipped towards the centre of the field, where the subsoil was masked by a more continuous buried soil. To the north-west, the same subsoil included some larger deposits of pure glacial gravels. Within the north-western c.10m of the easement this was obscured by a colluvial soil deposit collected against the boundary to field 5/12, forming a positive north-west facing lynchet 0.8m high, surmounted by a post-and-wire fence and a few bushes. No archaeological features were identified within this field.

Field 5/12 (NZ 410 349) 100m south-west of Hart Bushes Hall

The easement ran to the north-west through the extreme north-eastern corner of this field, which in this area was fairly level and under pasture. Stripping revealed a mid-brown sandy clay subsoil. No archaeological features were identified. The boundary to field 5/13 to the north-east is no longer extant, but marked by a 1.5m wide and 0.6m high bank surmounted by a line of small trees, presumably remnants of a long-since grown-out hawthorn hedge.

Field 5/13 (NZ 409 351) 200m west of Hart Bushes Hall. Site 4

The easement crossed this field diagonally from its south-eastern to its north-western corners. The route sloped up steeply towards a level area at the north-western corner. The field was under pasture, with earthwork remnants of ridge and furrow on the level area to the north-west. At the south-eastern end, the surface of the easement below the topsoil was masked by colluvium which produced two joining sherds of medieval pottery. Up the remainder of the slope to the north-west the subsoil was clean gravel in a sandy clay matrix, with no surviving traces of ridge and furrow. On the level area at the north-western corner of the field insufficient topsoil was removed to reveal a clean subsoil surface, although areas of mid-brown or yellowish brown gravelly clay were observed in places, together with some patches of buried soil. The pattern of ridge and furrow known from the upstanding earthworks could not be identified cutting the subsoil even where adequate stripping did occur, suggesting that the ridge and furrow had always been very slight. A single furrow was identified, some 0.8m wide.

The boundary between field 5/13 and field 5/14 to the west was formed by the dismantled route of the former Stockton and Castle Eden branch line now used as a bridleway. The 3.5m wide track-bed ran in a very slight cutting (currently only c.0.3m below the adjacent field surfaces) which deepens to the north. The track bed was flanked within the cutting by small ditches 1.0m wide and 0.5m deep, which were in turn flanked by banks up to 2.5m wide and

1.0m high and surmounted by mature hedges, bushes and developing woodland. To the south-east, the boundary between the railway and field 5/13 was formed by a post-and-rail fence.

Field 5/14 (NZ 407 352) 500m north-west of Hart Bushes Hall

Having crossed the dismantled railway at the eastern side of the field, the easement ran to the north-west towards the north-western corner of the field. The eastern side of the field was fairly level, then sloped up gradually to the north-west, and was under a crop of barley. The subsoil to the east was brownish yellow sand, giving way upslope to a fairly stone-free pinkish brown slightly sandy clay, then to a yellowish brown clayey sand containing occasional patches of gravel. The subsoil was obscured in some areas by patches of mid-brown clayey sand colluvium, but elsewhere no evidence for ridge and furrow or other archaeological features were observed. Several large spreads of small coal fragments were observed within the south-eastern half of the easement route but away from the railway line. These also included small fragments of brick or tile and were not therefore natural gravel deposits but must have been dumped. One spread was linear and aligned from east to west parallel to the northern field boundary and could perhaps have been filling a furrow (see field 9/3 below), but the source and purpose of this material was unclear, possibly representing fuel for ploughing engines. The boundary at the western side of the field consisted of a very slight bank surmounted by a trimmed but fairly old hawthorn hedge. This boundary was not stripped at the time of the watching brief. A sherd of pottery or ceramic building material was recovered from a patch of colluvium slightly north-west of the centre of the field.

Field 5/15 (NZ 405 353) 400m east-southeast of Woodlands Close

The easement cut across the extreme north-eastern corner of this field, continuing to slope gently up to the north-west. The field was under a crop of oats. The subsoil was light brown clayey sand with mid-brown lenses. Below the northern field boundary (a hawthorn hedge) this was overlain by a probable headland *c.*7m wide, projecting 3m southwards into field 5/15 as a berm with a 0.5m high lynchet at its southern edge and now used as a field edge trackway. The make-up of the headland consisted of very leached, light to mid-brown clayey sand soil, overlain by a thin layer of ash and hardcore which forms the modern surface. The southern edge of the headland was abutted by a layer of mid-brown clayey sand buried soil. A 2.5m wide furrow from former ridge and furrow cultivation ran along the foot of the southern edge of the headland, with another 6m to the south (centre to centre), filled with the same buried soil. The headland was visible as an upstanding earthwork for some 70-80m to the west of the easement, but faded out to the east.

Field 5/16 (NZ 405 355) Located immediately south of the road *c.*300m east of Woodlands Close

The easement entered the field near its south-eastern corner and crossed to the north-west to a point near the middle of its western side. The route sloped gradually up to the north-west. The field was under short grass previously harvested for hay or silage. See field 5/15 for the headland at the southern boundary. Butting against the northern edge of the headland, a layer of colluvium masked the subsoil for a short distance upslope. Upslope from this, the subsoil was successively yellowish brown clayey sand, mid-brown sandy clay and mixed pinkish brown and brown slightly sandy clays with moderate gravel inclusions. There were some patches of buried ploughsoil within depressions in the subsoil surface, but elsewhere modern plough-scoring of the subsoil was clearly seen and it was fairly certain that no ridge and furrow or other archaeological features were present. The boundary to field 5/17 to the west consisted of a simple post-and-wire fence and appeared to be a modern sub-division of a larger field.

Field 5/17 (NZ 404 355) Located immediately south of the road *c.*200m east of Woodlands Close

The easement crossed the field towards its north-western corner, initially rising slightly before running down to cross the north-eastern side of a *c.*30m wide hollow 2-3m deep adjacent to the road, which represented the site of a former pond. The subsoil was light to mid-brown

boulder clay scored by modern ploughing but with no obvious evidence for the presence of archaeological features. The boulder clay had been reduced to a light grey colour around the lower slopes of the hollow containing a former pond which still occasionally holds water (as seen during the walkover survey). The north-eastern quadrant of the former pond lay within the stripped area. It had been c.18m in diameter and was filled with mottled mid-to dark grey and dark brown silty clay. This smelt 'peaty' but no peat deposits were visible at the stripped surface. No artefacts were recovered from this deposit, although it formed the focus for numerous ceramic land-drains.

Field 6/1 (NZ 404 357) Immediately north of the road immediately north-east of Woodlands Close

The easement crossed the field diagonally from its south-eastern to north-western corners. The south-eastern part of the route was fairly level, then dropping down slightly before rising again slightly within the last 20m towards the north-western corner. The field was under pasture. The topsoil was generally 0.25m thick and consisted of relatively stone-free dark brown sandy clay. To the south-east, the subsoil was mid-yellowish brown stony boulder clay heavily scored by modern ploughing. Downslope to the north-west, this was overlain by mid-yellowish brown slightly clayey sand, reduced to a mid-grey colour in the base of the depression suggesting past wet conditions. The boulder clay reappeared as the ground rose again towards the north-western corner of the field. Several possible highly truncated furrows from former ridge and furrow cultivation were identified near the centre of the field, aligned from east to west approximately parallel to the northern and southern field boundaries. They were spaced 5m apart (centre to centre), were up to 1.2m wide but very shallow, and were filled with mid-brown sandy clay scored by modern ploughing. The northern field boundary (to field 6/2) consisted of a 0.5m high south-facing negative lynchet at the southern side of a 2.5m wide and 0.3m high bank surmounted by a fairly modern, intermittent, hawthorn hedge incorporating a large tree. There had certainly been no ditch to the north of this, less certainly none to the south.

Field 6/2 (NZ 404 359) Located immediately south-west of Rodbridge Cottage Farm

The easement crossed the south-western corner of this field, which was fairly level and under a young root crop. The subsoil was yellowish brown stony boulder clay. No archaeological features were identified. The western boundary consisted of a 0.2m high east-facing negative lynchet surmounted by a hawthorn hedge, with no evidence for ditches. At the southern side of the easement was a probable former pond against the boundary, extending some 11m back from the hedge and filled with dark brown, slightly peaty clayey silt.

Field 6/3 (NZ 402 360) 300m west of Rodbridge Cottage Farm

The easement crossed the field from east-south-east to west-north-west. The field was bisected by a track-way (no hedges or ditches), and was planted to the south of this with wheat and to the north with carrots. The land sloped gradually down to the north-west. The subsoil was mid-yellowish brown stony sandy boulder clay, covered to the north of the track by a layer of colluvium. No archaeological features were identified. The boundary to field 6/4 to the north-west had been removed.

Field 6/4 (NZ 402 361) Field immediately west of Rodbridge Cottage Farm

The easement crossed the south-western corner of the field, continuing to slope down to the west to north-west. The field was under a crop of carrots. The subsoil was mid-yellowish brown stony sandy boulder clay with no archaeological features visible. The boundary at the south-western side consisted of a hawthorn hedge on top of a 2m wide and 0.6m high bank. There was no visible indication of a ditch on the north-eastern side, but there had definitely not been one to the south-west.

Field 6/5 (NZ 400 360) Located immediately east of West Woodburn

The easement within this field initially sloped down to the north-west and then turned to run westwards across an undulating north-facing slope. The field was under wheat. At the south-

eastern end there was only 0.1m of topsoil, thickening to up to 0.40-0.45m downslope, overlying yellowish brown slightly sandy boulder clay scored by modern ploughing. After the easement had turned westwards, only the southern (upslope) half was stripped to the subsoil, the northern (downslope) half being masked by a layer of colluvium. No archaeological features were identified. The north-western field boundary was formed by a hedge, then a grass footpath leading to West Woodburn, then another small hedge at the north-western side.

Field 6/6 (NZ 397 361) Located immediately north of West Woodburn

The easement widened to 30m through this field, running for a short distance to the west before turning to run to the north-west. Aerial photographs show that the field was once covered in ridge and furrow. Most of the stripped area was fairly level, but included the base of a steep slope up to West Woodburn at its southern edge. The field was under barley stubble. Only the southern fringe of the area was stripped by tracked excavator, the remainder being stripped by bulldozer which precluded effective monitoring across most of the area. Where a clean surface was visible there were extensive areas of colluvium overlying yellowish brown boulder clay. Monitoring of the pipe trench confirmed that the boulder clay formed the subsoil throughout the field. No evidence for the former ridge and furrow or other archaeological features was identified.

Field 6/7 (NZ 397 362) Located immediately south of a stream and railway embankment

This level area was not stripped, the pipeline being directionally drilled beneath it, the stream and the dismantled railway embankment (the former North Eastern Railway Ferry Hill and Hartlepool branch line) to the north.

Field 6/8 (NZ 397 363) Area of woodland to north of disused railway line

The easement had been cut from south-east to north-west through a mature forestry plantation. The undulating ground surface rose gradually to the north. Topsoil stripping through this area was conducted out of sequence and was not monitored. Monitoring of the pipe trench showed the subsoil to be brown or greyish brown boulder clay, becoming stonier to the north. Hollows in the top of the boulder clay were filled by lenses of light grey or yellow clay. No archaeological features were identified. The boundary to the north (to field 6/9) was formed by a 1.5m wide and 0.6m high bank, covered in trees forming the woodland margin. No ditches were identified.

Field 6/9 (NZ 396 366) Located immediately south-west of Low Grange Farm

The easement ran along the western boundary of the field, which was slightly undulating but relatively level and under arable cultivation. The western field boundary was formed by a bank similar to that forming the southern boundary (2m wide and 0.3m high) with a ditch at the western side. Within the easement, a 0.30m thick layer of stone-free, mid-to dark brown sandy clay topsoil overlay mid-yellowish brown boulder clay containing occasional rounded stones. Where there were dips in the subsoil surface within the southern and central parts of the field, furrows from former ridge and furrow cultivation were identified, although these had been lost due to plough-truncation on higher parts of the surface. The furrows were aligned from east-north-east to west-south-west parallel to the southern and northern field boundaries, and were typically 4.5m apart, centre to centre. Individual furrows were up to 2.5m wide, generally rather less. The furrow fills contained small flecks and fragments of red fired clay as identified in furrows elsewhere on the pipeline route. Towards the northern end of the field, two furrows were identified running from north-north-west to south-south-east at right angles to the other group and parallel to the western field boundary. One was centred 5m from the boundary bank and the other 10m, and they were observed for 95m southwards from the northern field boundary. The two furrows took up the whole width of the easement cleared by tracked excavator, bulldozer-stripping of the remainder making it impossible to determine whether further furrows lay to the east. At the northern end of the field, it was bounded by a slightly banked-up public footpath flanked to the north by a narrow band of tree planting possibly on top of an older bank and including one much older tree suggesting that

the boundary was of some antiquity. A small ditch to the north of the trees appeared to be a modern cut probably associated with the colliery tip immediately to the north (in field 6/10).

Field 6/10 (NZ 395 369) Located immediately east of Wingate Grange

The easement crossed this area from south-south-east to north-north-west, turning to the west-north-west near the north-western side of the field. The whole area was covered by part of the reclaimed tip from the former Wingate Grange Colliery. The easement route sloped up steeply from the southern boundary and then sloped more gently down to the north-west. The field was under very long rough grass, possibly a hay crop. A thin layer of poor, stony, clayey topsoil overlay a thin skim of re-deposited boulder clay capping, with colliery waste showing through in places.

Field 6/11 (NZ 394 371) Located immediately north-east of Wingate Grange

This area consisted of tree-planting around the north-western side of the former Wingate Grange Colliery tip. The mixed planting appeared to be about 20-30 years old. The easement across this area steeped very steeply down to the west to north-west to the track-way leading to Wingate Grange. The soil and subsoil were similar to that seen in field 6/10.

Field 6/12 (NZ 394 371) Located immediately north of Wingate Grange

After crossing the track-way to Wingate Grange (at the eastern side of the field) the easement turned to the north across the eastern end of the field. The field was under a crop of wheat and sloped fairly steeply down to the north. Most of this area was stripped by bulldozer, severely limiting monitoring. Monitoring of the pipe trench through this area showed that the subsoil was brown boulder clay, overlain by up to 0.10m of a buried ploughsoil. No archaeological features were identified. The northern edge of the field was marked by a roadway running westwards towards Old Wingate.

Field 6/13 (NZ 394 372) North of the roadway towards Old Wingate

The roadside boundary at the southern edge of the field consisted of a large ditch with a hedge to the north. The easement across this area sloped steeply up to the north and the field was under pasture. Removal of 0.15-0.25m of dusty greyish brown sandy silty clay topsoil revealed a dump of colliery waste, unrecorded by the desk based assessment but recorded on the 1949 Ordnance Survey map. Monitoring of the pipe trench showed this to be 1.80m thick at the southern edge of the field, thinning upslope to the north and stopping at the northern field boundary, overlying brown boulder clay. The area lay below the terminus of a former wagon-way servicing Wingate Grange Colliery and known from cartographic sources. Its route survived to the east of the easement as a slight earthwork terrace in the south-facing hill-slope.

Field 6/14 (NZ 394 374) Located on the south-facing slope of Pickering Hill c.500m east of Wingate Grange Farm

The easement through this field continued to slope up steeply to the north, levelling-out within the northern half. It was under old cereal stubble. The subsoil throughout was a light to mid-yellowish brown, slightly to very sandy boulder clay, scored by modern ploughing. No archaeological features were identified. There was some evidence of recent disturbance of uncertain nature towards the northern end of the field. The northern field boundary was marked by a substantial old hedge, an apparent hedge-bank being formed entirely of modern soil ploughed-up against the boundary. No flanking ditches were identified.

Field 6/15 (NZ 394 376) c.200m south-west of the built-up area of Wingate

The easement crossed this area from south-south-west towards its north-eastern corner, sloping very slightly down to the north. The field was under a crop of wheat. At its southern end, the easement was crossed by a buried brick-rubble track-way corresponding with a carriage-road shown on the 1839 Tithe Plan. This probably went out of use when a covered water reservoir lying to the west of the easement was constructed across its route. The subsoil within the field was mid-yellowish brown slightly stony fairly sandy boulder clay. Fairly

clean topsoil stripping suggested that no archaeological features were present within the easement. The northern field boundary consisted of a slight south-facing negative lynchet and a hedge on a small hedge-bank with a shallow ditch to the north. Subsequent monitoring of the pipe trench across this boundary did not identify any true ditches.

Field 6/16 (NZ 395 380) Located immediately south of the A181

This area was woodland, crossed by the easement from south-east to north-west to north. Topsoil was stripped in this area out of sequence and was not monitored, although a subsequent inspection showed that too little had been removed to expose any archaeological features that might have been present. Monitoring of the pipe trench at the southern end recorded a subsoil profile of 0.6m of yellowish brown clay over stony brown boulder clay. To the north the subsoil was brown boulder clay with occasional lenses of yellowish brown lay on top. No archaeological features were identified.

Field 7/1 (NZ 394 385) On Green Hills Moor immediately north of the A181

The easement crossed this area from south-south-east to north-north-west. The field was level adjacent to the A181, then sloped steeply down to the north before rising gently towards the northern boundary. The field was under a cereal crop. The subsoil was a dark brown boulder clay overlain in places with mid-yellowish brown sandy clay with grey clay filling some hollows in the top. Within the northern half of the field the subsoil surface was masked by a buried soil horizon. The surface of the subsoil was heavily scored by modern ploughing and this, combined with the clayey nature of the topsoil and very wet weather meant that it was not possible to strip this area cleanly. As a result no archaeological features, including ridge and furrow known to have formerly existed in this field, were identified. In the base of the valley at the northern end of the field, the boulder clay subsoil was overlain over a distance of some 80m (extending c.15m into field 7/2) by laminar black peaty silt c.2m below the base of the topsoil and sealed by yellowish brown sandy clay. These deposits presumably represented former alluvial activity within the valley, now replaced by a simple ditch forming the northern boundary to field 7/2.

Field 7/2 (NZ 393 389) On Green Hills Moor c.500m south of Green Hills

The easement crossed this field from south-south-east to north-north-west, turning slightly to the north-west near the northern end. At its southern end the ground sloped steeply up to the north for a short distance out of the valley within the northern side of field 7/1, then ran down a longer but gentler slope to the north towards the Edderacres Burn. The field was under a crop of barley. Because of wet conditions and the clayey nature of the topsoil it was not possible to strip the easement cleanly and as a result no archaeological features were identified. Monitoring of the pipe trench demonstrated that to the north of the palaeochannel (see field 7/1 above), the subsoil throughout the field consisted of brown boulder clay overlain in places by patches of yellowish brown clay and occasionally interleaved with mid-to dark grey clay lenses. The northern field boundary was formed by the Edderacres Burn.

Field 7/3 (NZ 390 393) Located to the south of the B1279 immediately south-west of Green Hills

The easement crossed the field from south-east to north-west, sloping gradually up to the north from the Edderacres Burn and then more steeply up onto what was recorded by the desk-based assessment (Groundwork Archaeology Ltd 2002) as a former colliery tip surmounted by the modern road. Across the southern part of the field, the topsoil was again very clayey and impossible to strip cleanly, precluding the identification of archaeological features. On the steeper slope to the north, the topsoil abruptly changed to friable dark greyish brown clayey sandy silt. Monitoring of the pipe trench showed that the subsoil throughout the field was brown boulder clay, towards the top of the slope at the northern edge of the field overlain by layers of sand, some possibly interleaving with the boulder clay. This sandy capping of the slope could account for the change in the nature of the topsoil. No evidence was seen for the recorded colliery tip (see field 8/1 below) or for ridge and furrow known from aerial photographs to have formerly existed within this field. The B1279 road at the

northern edge of the field follows the route of the former Green Hills Railway built to serve Wheatley Hill Colliery. No evidence relating to the railway line as identified.

Field 8/1 (NZ 389 396) North of B1279 c.300m east of Wheatley Hill

The easement crossed the area from south-east to north-west, turning north near its northern side in order to cross a gas main and public footpath. The field sloped down from the roadway and disused railway at its southern side, levelling out and then rising slightly to the north, and was under a crop of oil seed rape. At the southern side of the field, the topsoil was very friable dark brown silty sand overlying very clean yellowish brown very sandy gravel. This area had been recorded in the desk-based assessment as being covered by part of the same colliery tip as in field 7/3, but, again, this was not identified. It was noted that there was a distinct rise in the field some 40m east of the easement, which probably represented the true edge of the tip. The sandy gravel subsoil continued down the slope to the north-west, becoming ginger-brown gravel with patches of sand and occasionally covered by areas of colluvium. No ridge and furrow or other archaeological features were identified. Within the slight valley at the base of the slope, the easement revealed a 20m wide dump of ash and domestic refuse (mostly bottles) of early 20th century date. One bottle (of Canadian origin) was dated 1932. Beyond this dump, the slight rise to the north was masked by a layer of buried ploughsoil, except within the northern 20m where it was seen to overlie orange-brown sand and small gravel. The northern field boundary consisted of a post-and-wire fence (becoming a hedge to the west of the easement), then a narrow metalled cycle path, then a very small ditch and a wooden post-and-rail fence forming the southern boundary to field 8/2. This group of features lay on top of a c.9m wide disused railway 'embankment', which in this location was only 0.3m high. This represented the track bed of the former North Eastern Railway Thornley branch line.

Field 8/2 (NZ 387 399) Located to the north of the disused railway embankment c.300m south-east of Low Crow's House

The easement within this field, which was under pasture, sloped evenly and fairly gently up to the north-west. To the south-east, the subsoil was yellowish or orange-brown fine sand and small gravel, gradually changing upslope to the north-west to yellowish brown clayey sand containing moderate stones. Fairly clean topsoil stripping in this field suggested that no evidence for ridge and furrow or other archaeological features was present. The northern field boundary to field 8/3 consisted of a 1.5m wide bank standing 0.5m high and surmounted by a fairly old hedge and occasional small (but old) trees. There was a heavily silted ditch 1m wide on the southern side within field 8/2.

Field 8/3 (NZ 386 400) 200m east of Low Crow's House

The easement in this field (which was under long grass) continued to slope up to the north-west. The subsoil throughout was moderately stony yellowish brown clayey sand. Towards the centre of the field, remnants of furrows from former ridge and furrow cultivation were identified, running from east to west. The furrows were spaced 4.0-4.5m apart (centre to centre), were up to 1.0m wide but not more than 0.10m deep, and were filled with a dark soil similar to the modern topsoil. Ridge and furrow within this field had previously been identified from aerial photographs. No other archaeological features were identified. The northern field boundary to field 8/4 consisted of a recently-cut ditch 0.8m wide, then a very small hedge bank 0.8m wide and 0.5m high surmounted by a post-and-wire fence and a fairly modern hawthorn hedge.

Field 8/4 (NZ 385 402) 200m south-east of High Crow's House

The easement ran from south-south-east to north-north-west, sloping very gently down, across the field which sloped more generally down to the east. The route rose very slightly at the north-western end. The field was under a crop of wheat. The subsoil consisted of slightly stony mid-brownish yellow sandy boulder clay, the surface heavily scored by modern ploughing. Some evidence for heavily truncated furrows of former ridge and furrow cultivation was observed, aligned from east to west parallel to the northern field boundary. Only one furrow (or possibly an in-filled ditch) was traced right across the stripped easement,

approximately 10m north of the southern overhead power lines. This was filled with modern ploughsoil. Other fragmentary furrows had a mid-brown fill flecked with red burnt clay fragments. Too little of these features was seen to determine the pattern or spacing. The boundary at the northern end of the field consisted of a 2m wide, modern-looking ditch and a slight (1.0m wide and 0.25m high) bank surmounted by a fairly modern hawthorn hedge.

Field 8/5 (NZ 384 404) Located immediately east of High Crow's House

The easement crossed this field from south-south-east to north-north-west, sloping very slightly up to the north and more generally upwards to the west. The field was under pasture. A Second World War pill-box, apparently in good condition, was located just outside and east of the easement. A slight earthwork hollow-way and associated grassed track-way ran adjacent to the southern field boundary. The subsoil was generally a mottled mid-yellowish brown, brown and mid-grey sandy clay with some gravel patches.

A 2m wide band of greyer, more reduced subsoil, ran parallel to, and 4m from (centre to centre), the southern hedge bank. Similar parallel bands were located 5m and 10m to the north (centre to centre). It was considered likely that these represented the former positions of ridges from former ridge and furrow cultivation which had otherwise been completely truncated by more modern ploughing. No other evidence for archaeological features was identified within the field. The boundary at the northern side of the field consisted of a 1m wide ditch, probably recently re-cut, then a small (1m wide and 0.3m high) bank surmounted by a intermittent hawthorn hedge and a post-and-wire and post-and-rail fence.

Field 8/6 (NZ 383 405) Located immediately north-east of High Crow's House. Site 5

The easement continued to slope up gently to the north to north-west, with the field sloping more generally up to the west and under pasture. Visibility was restricted by incomplete topsoil stripping, but a brownish yellow slightly gravelly boulder clay subsoil was revealed in places. At the southern end of the field, remnants of four or five furrows from former ridge and furrow cultivation were identified, filled with mid-brown clayey sand. They were aligned from east to west parallel with the southern field boundary and spaced 4-5m apart (centre to centre). More furrows were identified within northern half of the field on a similar alignment and spaced 3.5-4.0m apart (centre to centre). Two banks and three silted ditches were noted within the northern half of the field during the walkover survey. The two banks survived as upstanding earthworks, each 2m wide and not more than 0.25m high and composed entirely of modern-looking topsoil. They were probably ridges from the former ridge and furrow. The 'silted ditches' were not identified within the stripped easement and were probably the remains of truncated furrows. The northern field boundary consisted of a bank 1.5m wide and 0.3m high surmounted by a post-and-wire fence and occasional hawthorn bushes and with a 1.5m wide silted ditch at the northern side.

Field 8/7 (NZ 382 408) On Harehill Moor c.800m north of High Crow's House

The easement continued to slope undulating up to the north to north-west across an east-facing hill-slope. At its northern end it dropped down towards the boundary with field 8/8. The field was under rough pasture. The subsoil was yellowish brown sandy, gravelly clay. Visibility was restricted by incomplete topsoil stripping but occasional fragments of furrows from former ridge and furrow cultivation were observed, aligned from east to west. Not enough of these features were seen to determine their spacing. Ridge and furrow had previously been identified within this field from aerial photographs. Within the northern side of the field was a dry stream bed 7m wide and 1.5m deep which would have originally flowed from west to east. At its northern side, the boundary to field 8/8 was formed by remnants of a post-and-wire fence.

Field 8/8 (NZ 381 409) On Harehill Moor 500m south-west of Flemingfield Farm

From the dry streambed the easement within this field sloped fairly steeply up to the north to north-west. The field was under rough pasture. Towards the base of the slope, the subsoil was relatively stone-free yellow sandy clay, changing upslope to mid-yellowish brown sandy clay.

Incomplete removal of topsoil restricted visibility; however a furrow from former ridge and furrow cultivation was identified running along the easement approximately at right angles to the dry stream bed. A wider stripped area near the northern edge of the field showed three parallel furrows on a similar alignment and spaced 4m and 5m apart (centre to centre). These were filled with dark brown sandy clay which appeared to be relatively recent in origin. Ridge and furrow had previously been identified within this field from aerial photographs. There was a modern boundary to field 8/9 (see below).

Field 8/9 (NZ 381 411) On Harehill Moor 600m west of Flemingfield Farm

The easement continued to slope generally up to the north to north-west before cresting and dropping down slightly towards the northern boundary to field 8/10 which lay in a slight dip. The subsoil was typically mid-yellowish brown sandy clay scored by modern ploughing. The possible ridge and furrow within the northern edge of field 8/8 continued for 5m into the southern edge of field 8/9 before being lost due to truncation. Modern plough-marks also continued across the boundary, confirming its recent date. Ridge and furrow has previously been identified within this field from aerial photographs. No other archaeological features were identified. A flint blade (Appendix C) was recovered from the base of the topsoil 55m from the southern field boundary and 4m from the western side of the fenced easement. A large number of 2 inch mortar bombs were encountered approximately 100m from the northern field boundary. Subsequent enquiries suggested that these were surplus munitions disposed of by the Home Guard at the end of the Second World War. The boundary at the northern end of the field consisted of a simple post-and-wire fence.

Field 8/10 (NZ 379 414) On Harehill Moor 500 east of Harehill Farm

The easement crossed this area from south-south-east to north-north-west. The field rose slightly from the southern boundary but was fairly level to the north. The topsoil was dark brown slightly clayey sandy silt with darker peaty material within any depressions reflecting the area's former 'moor' status. There were numerous disturbances, probably representing the former position of trees, filled with black peaty soil. The subsoil was slightly stony yellowish brown sandy clay, heavily scored by modern plough-marks. A group of Iron Age features identified during topsoil stripping within this field were subsequently excavated and are described elsewhere in this report. Ridge and furrow was previously recorded within this field (visible in aerial photographs). This was not identified during the watching brief. The northern field boundary consisted of a post-and-wire fence.

Field 8/11 (NZ 378 417) On Harehill Moor 500m north-east of Harehill Farm

The easement crossed the field diagonally from south-south-east to north-north-west. The field sloped gently down to the north and was mostly under pasture, although at the northern end the easement passed to the west of some farm buildings through an area covered by an extensive spread of modern brick rubble and other farmyard clutter. The subsoil was yellowish brown boulder clay scored by modern plough-marks. No archaeological features were identified. The boundary to field 8/12 to the north consisted of a post-and-wire fence above a 0.3m high north-facing negative lynchet.

Field 8/12 (NZ 377 419) Located immediately south of the B1283 Durham Lane, 500m east of Haswell Plough

The easement crossed the eastern half of the field from south-south-east to north-north-west. The field sloped gradually down to the north and was under pasture. The subsoil was yellowish brown clayey sand. Numerous patches of mid-to dark brown buried soil almost certainly represented heavily truncated furrow bases from former ridge and furrow cultivation. The furrows were up to 2m wide, spaced 5m apart (centre to centre) and aligned from east to west parallel with the northern field boundary. The most northerly furrow was centred 4m from the northern boundary. The boundary to the north to the road consisted of a substantial modern hedge.

Fields 9/1 and 9/2 (NZ 376 421) Located at the northern side of the B1283, 500m east of Haswell Plough

The boundary between these two fields had been removed, and they were treated as a single area. The boundary to the roadway at the southern side of the field consisted of a hedge and a post-and-rail fence. The easement crossed the area from south-south-east to north-north-west. To the west of the easement the field sloped generally up to the west, with a pronounced 'hump' in the hill-slope caused by an embankment for railway sidings associated with a former coal depot adjacent to the road and sloping down to the north. The easement crossed lower ground at the foot of this slope, running down very gently to the north-west. A c.3m wide strip of the eastern edge of the railway embankment lay within the western edge of the easement at its southern end, gradually diverging to the west so that it passed out of the easement after 60m. The embankment was formed from colliery waste. To the north and east of the embankment, the modern topsoil was not more than 0.10m thick, black and sandy. Below this, most of the area of the easement was covered in up to 0.1m of a buried ploughsoil, which was not stripped, although in places the plough-scored top of brownish yellow sandy clay subsoil was observed. Due to the buried soil it was not determined whether archaeological features were present within this field. The northern field boundary consisted of an old hedge on top of a 2m wide and 0.5m high bank. Due to the presence of un-stripped buried soil layers it was not determined if this boundary was accompanied by in-filled ditches.

Field 9/3 (NZ 375 422) c.300m east of Haswell Plough

The easement crossed halfway across this field to the north to north-west before turning to the north-west. The field sloped gradually down to the north-west and was under pasture. The subsoil was yellow clay. Crossing the easement were a series of furrows from former ridge and furrow cultivation, running from east-north-east to west-south-west. The sequence began 4m north of the southern boundary with furrows spaced at 3-4m intervals (centre to centre), each furrow being up to 2m wide. They were filled with fine coal debris. This type of fill continued within the furrows stopped c.20m before the bend in the easement, the next furrow being filled with a buried soil which then formed a continuous layer over the subsoil to the north and itself overlain by areas of coal debris, showing that any ridge and furrow in this area had been levelled prior to the coal-dumping which had in-filled the furrows within the southern part of the field. The buried soil contained large quantities of 19th century pottery (not retained). Within the northern third of the field the easement passed onto the southern edge of an extensive colliery tip capped with a thin veneer of brown clay. No evidence for the large colliery building known to have stood within the line of the easement within this field was seen, and its remains are likely to have been sealed beneath the tip. The northern field boundary was marked by two parallel post-and-wire fences 2m apart.

Field 9/4 (NZ 374 425) 300m north-east of Haswell Plough

The easement crossed this area from south-east to north-west and sloped generally down to the north-west. The field was under a hay crop. Below 0.10m of topsoil was a up to 0.20m of re-deposited brown boulder clay capping more of the colliery tip seen in field 9/3 to the south. This tip will have served to mask any remains of a large number of railway lines or wagonways known to have formerly crossed the line of the easement in this area running southwards towards the extant engine house of 'Engine Pit' (SM 30930). The boundary to field 9/5 to the north-west consisted of a shallow ditch flanked by post-and-wire fences.

Field 9/5 (NZ 373 426) Halfway between Haswell and Haswell Plough

The easement crossed the western end of the field from south-east to north-west. The area was level and under pasture. The field was again covered in colliery waste. The boundary to the roadway to the north-west consisted of a post-and-rail fence and then a hedge.

Field 10/1 (NZ 372 427) Located between the two roads running between Haswell and Haswell Plough

The easement crossed the south-western side of the field, sloping up to the north-west before levelling-out near the north-western side. The topsoil consisted of 0.2m of dusty dark greyish

brown clayey sandy silt overlying 0.2m of re-deposited brown boulder clay sealing colliery waste. No evidence for two rows of houses (Low Row) known to have formerly existed in this area was seen, and it is likely that they have been buried below the colliery tip. The boundary to the road to the north-west consisted of a fairly modern hedge flanked by fences to either side. The road lies upon an 8m high embankment, the north-western side of field 10/1 having been levelled-up to the same height, presumably with colliery waste.

Fields 11/1 and 11/2 (NZ 371 428) Running up south-facing slope of Watson's Hill to the west of Haswell

At the south-eastern side of this area the boundary to the road was a post-and-rail fence. To the north-west of this the easement dived down the road embankment into a small, steep-sided valley. The small part of field 11/1 located within the easement was buried beneath an access ramp and topsoil bund and therefore not available for inspection. A lynchet between fields 11/1 and 11/2 recorded during the walkover survey had already been removed during construction of the ramp and no additional recording of this feature was possible. Within field 11/2, immediately to the south-west, the easement climbed up steeply to the north-west out of the valley, crested and began to slope gently down to the north-west, running along the north-eastern edge of the field. The fields were under pasture. Within the base of the valley there was up to 0.5m of a dark greyish brown sandy silt soil probably derived from former use of the area for allotments. This was above a layer of brown boulder clay overlying magnesian limestone. At the base of the slope to the north, the dark soil overlay an older leached soil containing lots of coal fragments. The south-facing slope was formed from magnesian limestone overlain by up to 0.2m of a dark brown subsoil or buried soil. To the north of the crest, the limestone was overlain by a thick (>1.5m) layer of mid-brown boulder clay. On the gentle north-west facing slope, furrows from former ridge and furrow cultivation were observed north of a point 110m from the north-western boundary. The furrows were aligned from south-east to north-west almost along the easement. They were up to 2m wide, but very shallow, and spaced 5m apart centre to centre. They were filled with a mid-brown clayey sand soil. A pottery sherd was recovered from this area.

Field 11/3 (NZ 370 430)

The pipeline was re-routed and did not pass through this field.

Field 11/4 (NZ 370 431)

The pipeline was re-routed and did not pass through this field.

Field 11/4a (NZ 368 431) 500m west of Haswell

This field represented an alteration in the pipeline route to avoid known archaeological remains within fields 11/3, 11/4 and 11/5. The easement crossed the north-eastern side of the field, gradually sloping down to the north-west before descending more steeply in the north-western third. The field was under a crop of wheat. The subsoil was brown boulder clay, disturbed by tree-boles. Within the north-western 120m of the pipe trench this was seen to overlie magnesian limestone which gradually rose to within 0.6m of the subsoil surface. No archaeological features were identified within the stripped easement or pipe trench, although where limestone was present its powdery nature tended to mask the sides of the pipe trench. The boundary to field 11/6 to the north was formed by a track-way which was not stripped or trenched during the watching brief.

Field 11/5 (NZ 370 432)

The pipeline was re-routed and did not pass through this field.

Field 11/6 (NZ 368 434) 300m south-east of Store Farm. Site 6

The easement within this field was stripped out of sequence and was not monitored. The pipe trench was subsequently examined, permitting limited recording. The land crossed by the easement rose in undulations to the north, crested and ran gently down towards the boundary with field 11/7 to the north. Within the southern part of the field, magnesian limestone

bedrock was sealed by up to 1m of brown boulder clay which thinned northwards towards the hillcrest before thickening to up to 2m down the slope to the north. No archaeological features were identified within this field. A group of later Neolithic or early Bronze Age worked flints and a small assemblage of medieval pottery were recovered within this field during the fieldwalking phase, but no additional artefacts were recovered after topsoil stripping. No ditches were visible at the hedge-line forming the boundary to field 11/7. The hedge stood on a small bank with a 0.3m high south-facing lynchet.

Field 11/7 (NZ 369 436) Located immediately south-east of Store Farm

The easement crossed the area from south to north, undulating down to the north. The field was under pasture. The subsoil to the south consisted of very stony mid-brown sandy boulder clay more than 1.6m thick. Much of the area was covered in a layer of buried soil, but in places furrows from former ridge and furrow cultivation could be seen cutting the subsoil. The furrows were aligned from south-west to north-east, parallel to the south-eastern field boundary. They were spaced 7m apart (centre to centre) and individual furrows were up to 4m wide. The boundary to the roadway to the north consisted of a simple hedge.

Field 12/1 (NZ 370 438) Located east of the road junction by Store Farm, south-east of Green Lane

At the southern side of the field the boundary to the roadway was a simple hedge with a north-facing lynchet. The large field curves around the eastern slope of a hill. The easement ran to the north-east and then turned slightly northwards, curving around the hill-slope. The southern half of the easement sloped gradually to the north. Due to a re-alignment the easement through this field passed immediately to the east of a Second World War pillbox which sat on a sharp break of slope overlooking the lower-lying ground to the north-east. Beyond the pillbox, the easement then ran much more steeply down a long slope to the north, before levelling-out towards Green Lane. At the southern end of the field, the subsoil was brown boulder clay more than 2m thick but with limestone boulders towards the base. This clay was covered by a mid-to dark brown buried soil horizon which potentially masked any archaeological features. About 100m north-east of the southern boundary, magnesian limestone appeared below the boulder clay at the base of the pipe trench, and as the easement ran downslope the overlying boulder clay thinned and petered out. The plough-damaged surface of the limestone was overlain by 0.1-0.3m of a natural-looking dark reddish brown clayey subsoil and could be seen to be cut by the furrows of former ridge and furrow cultivation aligned from south-west to north-east parallel to the north-western field boundary. The furrows were up to 2m wide, filled with mid-brown clayey sand and spaced 4m apart (centre to centre). Much of the slope to the north was covered in wider areas of buried soil. Below the sharp break of slope by the pillbox, horizontally bedded limestone outcropped immediately below the topsoil. The lower part of the slope was masked by colluvium up to 0.5m thick. Within the level area below the slope the limestone was overlain by yellowish brown boulder clay again cut by furrows running parallel to the north-western field boundary. These were spaced 5m apart (centre to centre) and individual furrows were up to 3m wide. At the north-western side of the field, the hedge on the southern side of Green Lane had an infilled ditch at its south-eastern side. This was 1.5m wide and 1.0m deep and filled with a fairly recent-looking dark greyish brown fill.

Field 13/1 (NZ 370 441)

The pipeline was re-routed and did not pass through this field

Field 13/2 (NZ 370 443)

The pipeline was re-routed and did not pass through this field

Field 13/3 (NZ 372 444) Located to the north-east of Green Lane, 300m south-west of High Fallowfield. Pig Hill

The pipeline was re-routed slightly to the east so as to avoid fields 13/1 and 13/2, running north and then north-north-west through the western side of this field instead. Most of the

easement within this field contained archaeological remains of Iron Age date which were excavated and the results are described elsewhere within this report. After excavation had ended, stripping of remaining parts of the easement was monitored. No additional archaeological features were identified.

Field 13/4 (NZ 370 447) 500m west of High Fallowfield

This 30m wide strip of land was crossed by the easement from south to north. Partial stripping at the northern side of the area revealed reddish brown slightly clayey sand subsoil. No archaeological features were identified. Field 13/4 was divided from field 13/5 to the north by a hedge bank.

Field 13/5 (NZ 370 451) Located at the west side of Salter's Lane

The easement crossed the field from south to north, rising sharply northwards at the southern end to a crest, falling gradually and then rising again towards the north-western boundary. The subsoil at the southern end was reddish brown slightly clayey sand. This changed over the rise in the centre of the field to stony brownish yellow sand, changing back to reddish brown clayey sand again towards the northern end of the field. The subsoil was obscured in places by areas of a buried soil. No archaeological features were identified within the field. At the north-western side of the field was 1.3m high south-facing lynchet, a track-way and then a second 0.9m high lynchet up to the hedged boundary to field 13/6. This substantial boundary represents the parish boundary between Hetton le Hole and Haswell Township, and could be of considerable antiquity.

Field 13/6 (NZ 370 455) Located at the south side of South Hetton Road immediately east of Easington Lane village

The easement crossed the eastern corner of the field from south to north. The area was level. The subsoil within the area was stony yellowish brown sandy clay below a heavy scatter of coal fragments. No archaeological features were identified within the field.

Field 14/1 (NZ 371 457) Located at the north side of South Hetton Road immediately east of Easington Lane village

The easement crossed the area from south-south-east to north-north-west. The southern part of the field undulated considerably before sloping down towards the northern side of the field. Within the southern part of the field stripping of the higher areas revealed brown boulder clay subsoil, covered in the hollows by colluvial buried soil deposits. Within the northern part of the field the subsoil changed to mixed reddish brown sands and clayey sands. Near the southern end of the field two parallel small gullies or slots crossed the easement. Modern brick and pottery within the fills of these features suggested that they were land drain trenches.

Field 14/2 (NZ 370 457) Behind the houses on the north side of South Hetton Road to the east of Easington Lane village

The easement crossed this narrow field from south to north, sloping slightly up to the south. Within the pipe trench, magnesian limestone gravel was observed, overlain by up to 1m of a very sandy, light brown, layered colluvium apparently containing numerous buried turf lines. No archaeological features were observed within the field either during the topsoil stripping or pipe trenching. The point where the easement crossed the boundary to field 14/3 was noted to be the lowest in the nearby landscape. The boundary was marked by a hedge bank, ditched at both sides.

Field 14/3 (NZ 370 459) Located immediately south of Hetton Moor Farm

The easement crossed the middle of the field from south-south-east to north-north-west. The field was fairly level, sloping down towards its southern edge. Most of the area of the stripped easement was masked by a layer of reddish brown buried soil. Monitoring of the pipe trench showed that this was up to 0.3m thick. Below this, at the southern end of the field, the thick colluvial deposit, observed at the northern end of field 14/2 continued, again overlying

limestone gravel. The gravel at the base of the pipe trench rapidly gave way to brown boulder clay, which was overlain by increasing thicknesses of layered sands and gravels to the north. No archaeological features were identified within this field. The northern field boundary was marked by a hedge bank.

Field 14/4 (NZ 369 460) Located immediately west of Hetton Moor Farm

The easement crossed this narrow field from south-south-east to north-north-west. The exposed subsoil was a yellowish brown slightly clayey sand. The monitoring archaeologist considered this material to be undisturbed natural subsoil rather than quarry landfill reinstatement as suggested in the Archaeological Fieldwalking and Field Reconnaissance Report (section 17.7.3). Field 14/4 was separated from field 14/5 to the north by a modern trackway. Removal of this revealed what appeared to be a former hedge bank below its northern edge. The bank was 0.50m high and formed of dark brown soil.

Field 14/5 (NZ 370 463) Located immediately north-west of Hetton Moor Farm and south of Murton Lane

After entering this field from the south, the easement turned to the east-north-east, then north-east then east, skirting around the north-western corner of Hetton Moor Farm, from where it was re-routed to pass into the adjacent field to the east (field 14/6). Along the southern edge of field 14/5, the bank below the trackway forming the southern boundary (see field 14/4 above) was traced eastwards for 40m, overlying apparently undisturbed deposits of sands, sandy clays and gravels. Where the route moved away from the southern boundary, the deposits observed appeared to represent the expected quarry landfill.

Field 14/6 (NZ 371 463) Located immediately north-east of Hetton Moor Farm

The pipeline was re-routed to run along the western edge of this field. The field was an active gravel quarry, the pipeline route running along a narrow band of un-extracted gravel against the western field boundary. However, previous disturbance from quarrying activities will have destroyed any archaeological features within this area, and no watching brief was attempted.

Field 15/1 (NZ 370 464) Located at the north side of Murton Lane

After crossing Murton Lane the easement crossed the extreme eastern corner of this field. The observed subsoil was mixed yellow and grey clay. There was a 0.5m lynchet up to field 15/2 to the north.

Field 15/2 (NZ 370 465) Bounded to the north by the B1285 and to the east by Murton Lane

The easement crossed this level area from south to north. The subsoil was mixed yellow and grey clay, cut by north-to-south aligned furrows of former ridge and furrow cultivation, spaced 3.5m apart (centre to centre).

Field 16/1 (NZ 370 467) On Constitution Hill 200m east of Little Eppleton Farm

The easement crossed the field from south to north, rising towards a hill-crest in the northern side of the field. The subsoil was brown or yellowish brown boulder clay, the surface heavily scored by modern ploughing. No archaeological features were identified. At the northern boundary there was a 1m high lynchet up to field 16/2.

Field 16/2 (NZ 370 470) 300m north-east of Little Eppleton Farm

The easement crossed the centre of the field from south to north. The route initially dropped slightly, rose to a crest and then ran gradually down to the north. The subsoil throughout the field was brown boulder clay, overlain to the north by pockets of laminar sands and gravels. Towards the southern end of the field there were some areas of a dark brown buried soil horizon. No archaeological features were identified. At the northern limit of the field there was a 1.5m build-up of a light brown slightly clayey sand overlying the boulder clay and forming a substantial positive lynchet at the crest of the slope down into area 16/3, suggesting

that there had previously been a long-lived physical boundary in this location, which has now disappeared.

Field 16/3 (NZ 370 472) 400m north-east of Little Eppleton Farm

This area consisted of a steep-sided small valley, crossed by the easement from south to north. The slopes to north and south were wooded, the base being occupied by a modern farm track-way. The north-facing slope at the southern side was cleared without monitoring, but the subsoil consisted of boulder clay overlain by sandy colluvium. At the northern side, the route cut through a substantial, wooded, linear mound at the foot of the slope, across a footpath lying within a cutting for the former North East Railway Durham and Sunderland Branch Line (1839-1953) and then up a short, steep, wooded slope with a gradient of $c.35^\circ$. In order to reduce the gradient of the easement up this slope, a 15m wide cutting was made through the linear mound and track-bed and into the slope

The subsoil of the south-facing slope above the track-bed consisted of horizontally-bedded mid-yellowish brown glacial clayey sands. At the level of the track-bed this sequence overlay grey clay.

The linear mound had been constructed along the base of the south-facing slope. It was $c.100\text{m}$ long, extending 35m to the west of the easement and 50m to the east. Where cut through it was 21m wide and stood 2.3m above the original ground surface. It had a long slope tailing-off down the valley-side to the south and was highest to the north with a short, much steeper slope down to the track-bed. The mound was formed of dumps of mixed yellowish brown, brown and mid-grey stony boulder clays. Steep tipping lines down to the west suggested that the material had been dumped in sequence from east to west. The material contrasted with the natural subsoil seen in the valley side immediately to the north, showing that the material had been brought from elsewhere rather than just dumped straight down the slope. Where the easement was cut through the mound it was possible to identify in section a short length of the original ground surface, represented by a 0.05-0.10m thick layer of mid-to dark brown sandy clay buried topsoil containing numerous coal fragments. The top of this deposit was some 1.5m above the modern surface of the track-bed, showing that the railway had been constructed within a slight cutting. The buried soil overlay a 0.2m thick layer of mid-yellowish brown clayey sand, probably natural colluviation from the slope above, over the grey clay natural subsoil.

The track-bed lay half-way up the south-facing slope and had a visible surface width of 5.5m with a narrow cinder path and including within the northern side a shallow ditch 2.5-3.0m wide. Cutting of the pipe trench showed that the cinder path actually formed part of the original track-bed surface, resting directly over the grey clay subsoil. It had an overall width of 5.5m and was up to 0.4m thick in the centre, tailing-off to either side. The southern edge coincided with the northern edge of the long mound, whilst the northern edge ran into the base of the south-facing valley side, passing below the 'ditch' which has clearly been created since the railway was dismantled and which was cut into a thin layer of colluvium derived from the slope to the north. This colluviation also accounted for the narrow width of the modern footpath which was restricted to the southern side of the former track-bed.

Field 16/4 (NZ 369 474) Bracken Hill 700m south of Great Eppleton. Site 8

From the break of slope at the top of the steep valley occupied by area 16/3, the easement crossed file 16/4 from south-south-east to north-north-west, continuing to rise fairly steeply to the north before cresting and running down more gently towards the northern boundary. The subsoil throughout the area consisted of brown boulder clay overlain in places by patches of orange-brown clay and reddish brown silty sand buried soil. A crop-mark enclosure (Site 8) within this field had not been identified during advance trial trenching (NAA 2004) and was not identified during the watching brief. Truncated ridge and furrow recorded within one of the trial trenches was not identified during the watching brief. No other archaeological features were recorded. Monitoring of the pipe trench did not identify any ditches at the

boundary to field 16/5 to the north, where there was a 1m high lynchet down to the north. This boundary follows the line of the parish boundary between Great Eppleton and Little Eppleton Townships and could hence be of considerable antiquity.

Field 16/5 (NZ 368 477) 400m south of Great Eppleton

The easement crossed the field from south-south-east to north-north-west, generally sloping up to the north. The subsoil throughout the field consisted of brown boulder clay, overlain by areas of a buried soil up to 0.3m thick. No archaeological features were identified. The boundary to field 16/6 to the north was ditched at both sides.

Field 16/6 (NZ 367 480) Located at the south side of Downs Pit Lane immediately south-west of Great Eppleton

The easement crossed the eastern end of the field from south-south-east to north-north-west, dog-legging slightly to the west at its northern end in order to avoid the western side of the complex of buildings at Great Eppleton. The land continued to slope generally up to the north. The subsoil throughout the field was brown or yellowish brown boulder clay, overlain in places by up to 0.3m of a buried soil horizon. Ridge and furrow is known from aerial photographs to have formerly been present within this field. No evidence for this or other archaeological features was identified during the watching brief.

Field 16/7 (NZ 366 483) Located on Windmill Hill at the north side of Downs Pit Lane immediately north-west of Great Eppleton. Site 9

Down Pits Lane at the southern side of the area lay within a slight (0.3m deep) hollow-way, with a fence at the northern side forming the southern boundary of field 16/7. The easement crossed the centre of the field from south-south-east to north-north-west. The southern 100m of the route was fairly level, before running up a steep slope and then levelling-off towards the northern side of the field. The field was under a crop of wheat. Most of the south-facing slope had already been disturbed during earlier trial trenching (NAA 2004). Most of the area revealed by topsoil stripping within this field was masked by buried soil or colluvial deposits, typically mid-brown clayey sand soil. At the southern edge of the field the subsoil was seen to be very stony mid-yellowish brown sandy boulder clay, seen again in plan near the top of the south-facing slope. Monitoring of the pipe trench showed that this was the subsoil throughout area. The colluvium was up to 0.8m thick at the base of the south-facing slope, tailing-off across the level area to the south and up the slope the north. The buried soil horizon within the level area to the north of the slope was between 0.1m and 0.2m thick. Ridge and furrow is known from aerial photographs to have formerly existed within this field. However, perhaps due to the masking soils, no archaeological features were identified during either phase of watching brief. The boundary to field 16/8 to the north consisted of a low bank, 3m wide and 0.5m high, surmounted by an old, intermittent hedge, and with a slight lynchet up the north (probably partially both negative and positive). Monitoring of the pipe trench confirmed that there were no ditches present at this boundary.

Field 16/8 (NZ 365 487) Located on Windmill Hill, c.500m north of Great Eppleton

The easement crossed the western side of this field from south-south-east to north-north-west. At the southern end the ground sloped up gently for 100m before undulating down to the north. The field was under a crop of wheat. The topsoil was typically relatively stone-free dark brown clayey silty sand. Much of the stripped surface was masked by 0.05-0.20m of a mid-brown clayey sand buried soil, and some areas were not fully cleared of topsoil. The subsoil towards the southern end of the field was sandy brown boulder clay. To the north this was seen to overlie glaciated limestone gravel and rubble, and the boulder clay became stonier. At the north end of the field, the boulder clay was overlain by lenses of gravel. The boundary at the northern end of the field consisted of a 1.5m high north-facing negative lynchet down to field 16/9. This was surmounted by remnants of an ancient hawthorn hedge. Insufficient topsoil and buried soil was stripped to determine in plan whether the boundary included any ditches, although monitoring of the pipe trench confirmed that none were present.

Field 16/9 (NZ 364 492) 800m south-west of Warden Law

The western end of this roughly rectangular field had been divided off by a modern fence running parallel to an existing gas pipeline and perhaps left over from its construction. The new pipeline easement entered the southern side of the field running to the north-north-west parallel and slightly to the west of the existing pipeline. Halfway across the field the route kinked to the north-east in order to cross the line of the existing pipeline and the modern boundary, and then ran northwards to the stream forming the northern field boundary. The route sloped unevenly down to the north across the field, which was under pasture. The walkover survey had identified that the field contained earthwork remains of a probable hollow way running from south to north across the field c.15m to the west of the pipeline easement. During the watching brief other earthwork features were observed, including a former hedge-bank running up the centre of the field from east to west and cut by the hollow way, and also slight remains of former ridge and furrow cultivation occurring both sides of the hedge bank and aligned from north to south. Monitoring during topsoil stripping recorded additional details of both groups of features. The former hedge-bank was 1.5m wide and 0.3m high and was formed from leached light yellow sandy clay. Stripping revealed that the bank was in fact the enhanced northern edge of a lower 6m wide bank. This was divided by a 0.8m wide ditch with a dark, fairly modern-looking in-fill and with the hedge-bank at its northern side. Another small in-filled ditch lay at the northern side of the bank(s). The wide bank was respected by the ridge and furrow to the south and north which did not cross its line. This group of features presumably represented a former headland between the two groups of ridge and furrow, its northern side subsequently becoming fossilised as a hedged and ditched field boundary.

After topsoil stripping, the furrows within the southern part of the field were typically 1m wide, spaced 4m apart (centre to centre) and filled with mid-brown sandy clay soil. The furrows to the north of the hedge-bank or headland were of similar appearance and spacing. Near the northern edge of the field, past the kink in the easement, one of the furrows was seen to be an earthwork ditch deepening downslope towards the stream. As an earthwork it was only 0.7m deep, but it was excavated by machine as part of the topsoil stripping and proved to be up to 3m wide and more than 1m deep to the north. It had a dark greyish brown clayey upper fill over a mid-brown lower fill.

The subsoil was fairly stony brownish yellow sandy clay, masked within the southern 15m of the easement by a buried soil horizon presumably derived from the substantial lynchet at the southern boundary (see field 16/8 above), and elsewhere typically by c.0.10m of buried soil. The absence of plough-marks either within the upper surface of the subsoil or across the in-filled furrows suggested that the field has never been ploughed in modern times.

The northern boundary to the field consisted of a stream, now dammed to form a small pond.

Field 16/10 (NZ 364 495) 500m south-west of Warden Law

The easement crossed the area from south-south-east to north-north-west. From the stream at the southern side, the land rose slightly to the north, then ran down into a small valley before passing up a longer slope to the north, cresting just within the northern end of the field. The field was under a crop of wheat. The southern c.100m of the easement had been stripped prior to the watching brief and no observations were possible. Yellowish brown or yellow boulder clay subsoil occurred throughout the field. In the southern end of the field, through the small valley and for the lower half of the main south-facing slope the subsoil was masked by buried soil and colluvium, up to 0.70m thick through the base of the small valley. No evidence for any former stream was seen within the valley and no archaeological features were observed within the field. At the northern end of the field, it was divided from the road to the north by a narrow strip of woodland containing a cutting for the former Rainton and Seaham Railway (1831-1896). The pipeline crossed this area and the road by directional drilling direct into the Warden Law AGI, and hence no recording of the railway was possible.

Appendix I

COWPEN BEWLEY TO WARDEN LAW GAS PIPELINE

COUNTY DURHAM

UPDATED PROJECT DESIGN

1.0 BACKGROUND

- 1.1 During the Cowpen Bewley to Warden Law Gas Pipeline project several topographic studies, archaeological evaluations, two excavations and monitoring of the topsoil stripping of the pipeline corridor were undertaken. The resulting information from the excavations at Pig Hill and Harehill Moor included a number of categories worthy of further study, namely the stratigraphic record of the site, the pottery, metal working debris and environmental remains. The study of any relationship between Pig Hill and the smaller site at Harehill Moor encountered during monitoring was also deemed important, as was the analysis of medieval pottery collected during monitoring.

2.0 AIMS AND OBJECTIVES OF THE ASSESSMENT

- 2.1 The aims and objectives of this project included the routine assessment of the stratigraphic record and artefacts recovered from the two excavation sites recorded during the project. Of primary importance was the assessment of the potential for the various sets of information to add to the existing regional and national archaeological records and thus fulfil priorities highlighted by English Heritage (1997) and Haslegrove *et al.* (2001). A full understanding of the stratigraphic record of the excavation at Pig Hill has the potential to gain an understanding of a rare unenclosed settlement of Iron Age date. Such a site is significant for two reasons as few occupation sites of Iron Age date are known in the region and more importantly unenclosed sites are rarer still. Analysis of the pottery recovered from both Pig Hill and Harehill Moor would greatly enhance the poor data set for the region. Paleoenvironmental analysis of whole earth samples taken from the excavations could potentially indicate areas of activity related to the processing of agricultural produce within the sites and identify the types of crops grown nearby. Any metalworking debris indicates the presence of industrial activities at the site and its distribution would highlight the location of such activity within the site.

3.0 SUMMARY OF THE RESULTS OF THE ASSESSMENT

Stratigraphic assessment

- 3.1 The stratigraphic analysis of the two excavated sites of Pig Hill and Harehill Moor has enabled a broad picture of the phases of activity present at both sites to be constructed. However the site at Pig Hill represents a much more complicated palimpsest of phases of settlement across a large area which extends beyond the limits of excavation. A definitive interpretation of the chronology of Pig Hill can not be achieved without further analysis and integration of the artefactual and ecofactual archive with the stratigraphic record.

- Pottery assessment**
- 3.2 Assessment of the pottery was undertaken to obtain information on the chronology and nature of the pottery assemblages collected during the project. A medium-sized assemblage of pre-Roman Iron Age pottery was recovered from Pig Hill. A small assemblage of similar material was collected from Harehill Moor and a medium-sized assemblage of medieval pottery, with a few later pieces were recovered during monitoring.
- Flint assessment**
- 3.3 A small number of flints were recovered during the project, including pieces found during monitoring, the evaluation of High Haswell Farm and during the excavations at Harehill Moor and Pig Hill
- Metalworking debris**
- 3.4 Substantial evidence relating to metalworking activities carried out on the site of Pig Hill was recovered during the excavation. The initial assessment of this evidence has demonstrated concentrations of debris associated with smithing activities linked to the rectangular structure near the crest of the hill to the south of the site. Another smaller concentration of metal working debris was located at the far northern edge of the site.
- Stone assessment**
- 3.5 Two fragments of worked stone were recovered during the excavation at Harehill Moor. They proved of limited value except to indicate the presence of domestic activity within the vicinity of roundhouse gully 2002.
- Metal finds assessment**
- 3.6 Two iron objects and a single copper alloy object were collected from Pig Hill, the former two were from within evaluation Trench 26, the latter from a plough furrow. The iron objects appeared to be nails, the copper alloy object was a strap end. Surface decoration was faintly visible on the strap end which appeared to be made from a different alloy than the rivet which held it.
- Environmental assessment**
- 3.7 The evidence from the samples and industrial waste recovered from Pig Hill indicated that iron smithing, copper working, crop processing and domestic activity were occurring on the site. There was some indication that the spatial distribution of this evidence suggests a focus of smithing in the south central area of the site with crop processing occurring in the centre and possibly the south central area. The survival of all environmental evidence except charred plant remains is either very poor or non-existent. Only burnt bone or tooth enamel fragments survived, no shells or waterlogged remains survived. Some seeds are heavily mineralised and may not be charred. The only domestic animals identified from the site are represented by a single cattle bone collected during excavation and two pig tooth fragments from the environmental samples. Barley and wheat are indicated as crops and a single fragment of hazelnut shell represents the only other confirmed food taxa. There was an abundance of charred grass seeds, tuberous material (probably grasses) and probable heather wood which may have been used as fuel and tinder. Another possibility is that the charred tuberous material relates to its use as bedding and subsequent disposal by burning.

- 3.8 The bulk of the twenty two samples collected from Harehill Moor produced no more than a few charred weed seeds and a little charcoal. However, context 2082 contained a couple of charred grains, two pieces of chaff, grass seeds, a number of weed seeds, a hazelnut shell fragment and a charred tuber. Most of the richer samples derived from ditches 2002, 2004 and 2006. These produced charred cereal grains, occasional chaff fragments and a few weed seeds. The richest sample derived from context 2068 and included the largest charcoal component.

4.0 SUMMARY OF THE SIGNIFICANCE OF THE ASSESSMENT

Stratigraphic record

- 4.1 Preservation of stratigraphy on such a scale as was recorded at Pig Hill and Harehill Moor is unusual in prehistoric sites within the region, marking both sites out as of special significance. The stratigraphy on the Pig Hill site was such that it has permitted a provisional sequence of developments within the site to be established and some phasing of the contexts to be achieved. However, this phasing is relative and due to the lack of horizontal stratigraphy across the site an overall site chronology cannot yet be established. The phasing would be greatly enhanced by obtaining a series of radiocarbon dates from selected excavated deposits. The further study of variations within enclosure features, in terms of their form, date, scale and spatial distribution will allow the evidence from this site to be contrasted with that from other similar excavated sites in County Durham and the wider region. This comparison will facilitate a greater understanding of settlement morphology and socio-economic exploitation of the landscape within the region during the Iron Age.

Pottery

- 4.2 Iron Age pottery assemblages of any substance are extremely rare within the region. The study of the artefacts from the Pig Hill and Harehill Moor and the pattern of their distribution will serve to enhance our understanding of both the activities undertaken within the sites and add to the understanding of the material culture of the region. Obtaining absolute dating from radiocarbon analysis of charred plant remains within contexts containing pottery will increase the limited data available for relative dating. This information is of paramount importance in forwarding Iron Age studies in the region (Haselgrove *et al.* 2001) and has the potential to provide a better understanding of chronologies within sites across a much wider area. The medieval pottery collected during monitoring should be examined and reported upon in detail

Flint

- 4.3 A small number of flint flakes and tools were recovered during the project. The assemblages proved of limited value except to indicate that there are probably sealed or recently disturbed flint assemblages close to the Pig Hill site, beyond the area of excavation.

Metalworking debris

- 4.4 Substantial evidence relating to metalworking activities carried out on the site of Pig Hill was recovered during the excavation. The initial assessment of this evidence has demonstrated concentrations of smithing debris linked to the rectangular structure near the crest of the hill to the south of the site. Another smaller concentration of metal working debris was located at the far northern edge of the site. The further analysis of this distribution pattern combined with secure dating will enhance the

value of this evidence. This category of evidence is extremely rare in the north-east of England north of the River Tees and comparison with other sites will greatly add to an understanding of metalworking processes during the Iron Age in the region.

Stone

- 4.5 Two fragments of worked stone were recovered during the excavation at Harehill Moor. They proved of limited value except to indicate the presence of domestic activity within the vicinity of roundhouse gully 2002.

Metal finds

- 4.6 Although some useful information has been gained from the initial assessment of these objects, no further analysis is recommended. The copper-alloy strap end recovered from Pig Hill should be conserved and retained.

Environmental

- 4.7 The initial assessment of the environmental evidence has resulted in an indication of the types of agricultural activities carried out on both excavation sites. The results from Pig Hill have also provided an indication of the distribution of such activities. However the significance of the environmental evidence lies with closer species identification linked with datable contexts which will provide spatial information of agricultural activities throughout the phases of occupation. The types and relative importance of the cereal crops grown and harvested within the vicinity of the site could be ascertained from analysis of the small numbers of grain and particularly chaff in the majority of the samples. Identification of the chaff will give a clear indication of the crops being processed at the site. Analysis of charcoal samples from the site has shown variation in the fuels being used, some samples were predominantly wood charcoal while others included abundant heather twigs and tubers. The latter suggests that uprooted heather or even turfs may have been used as a fuel source. Another possibility is that the charred tuberous material relates to its use as bedding or thatch and subsequent disposal by burning. Both of these hypotheses need to be tested.
- 4.8 Of the samples available for radiocarbon dating the carbonised seeds, tubers and especially the charred hazelnut shells are of greater value than the wood charcoal. This is due to inaccuracies caused by the 'old wood effect' by charcoal derived from mature trees.

5.0 AIMS AND OBJECTIVES OF THE ANALYSIS

Stratigraphic record

- 5.1 The aim of further analysis of the stratigraphic record is to provide a more comprehensive understanding of the site. This will involve a detailed analysis of the stratigraphic and spatial interrelationships of the features and deposits which comprise the site record. This should be undertaken in conjunction with other analyses the results of which will be incorporated in the final report. The aim of such an approach is to arrive at a more complete and comprehensive understanding of the archaeology. Radiocarbon dating of 11 features will be undertaken to further inform this process.

Pottery

- 5.2 A more detailed analysis is required of the pre-Roman Iron Age pottery fabrics from both Pig Hill and Harehill Moor. The aim of the study is to provide a definitive account of the pre-Roman Iron Age pottery fabrics present at the site through its quantification tabulated by context, together with its relative proportions. A brief review of the pottery within its regional context and any contribution from the ceramic assemblage to the interpretation of site status and function should be included.

Flint

- 5.3 It is recommended that the flint recovered from the excavation at Pig Hill is illustrated in order to provide information relating to the nearby scheduled Bronze Age settlement.

Metal working debris

- 5.4 Further detailed analysis of the distribution of metal working debris recovered from Pig Hill is required with the aim to refine the evidence of concentrations of smithing activities within the site. This kind of evidence is extremely rare in the north-east of England north of the River Tees. Research into other excavated Iron Age sites where metal working debris was recorded will enable a comparison of the evidence recorded at Pig Hill to be made. The aim of this research will be to add to the current corpus of information relating to Iron Age metalworking practices across the region and beyond.

Stone

- 5.5 No further analysis is required on the fragments of worked stone.

Metal finds

- 5.6 Although some useful information has been gained from the initial assessment of these objects, no further analysis is recommended. The copper-alloy strap end recovered from Pig Hill will be conserved and retained.

Environmental

- 5.7 Further study of the environmental material from the samples collected during the Pig Hill excavation should be restricted to the charred plant and charcoal remains. This analysis should aim to identify the types and relative importance of the cereal crops grown and harvested during occupation of the site. The identification of the chaff will give a clear indication of the crops being processed at the site. A selection of the richer charcoal samples need to be studied in order to assess the fuels being used at the site and to try and account for the differences between some samples that are predominantly wood charcoal while others include abundant twigs. All samples selected for radiocarbon dating should be identified so that the most suitable material selected for dating.

Documentary analysis

- 5.8 The excavated sites of Pig Hill and Harehill Moor represent rare examples of excavated Iron Age settlement sites in the north-east of England north of the River Tees. Analysis of documentary evidence relating to similar sites in the region and beyond, integrated with the stratigraphic and ecofactual evidence from the excavated sites will enable a fuller interpretation of the sites within their chronological and socio-economic landscape at both regional and national level.

6.0 REPORTING AND PUBLICATION

6.1 An integrated post-excavation report will be prepared on completion of the analysis works. A version of the report should be prepared to publication standard for submission to a regional or national journal.

6.2 The analysis report shall contain:

- A summary of the project background
- The site location
- A methodology
- A summary of the results including phasing
- An interpretation of the results in relation to other sites in the region
- A post-excavation analysis of the stratigraphic and other written, drawn or photographic records
- A catalogue and post-excavation analysis of each category of artefact recovered during the excavation
- A catalogue and post-excavation analysis of any faunal remains recovered during the excavation
- A catalogue and post-excavation analysis of the results of the soil sampling programme
- Catalogues and post-excavation analyses and/or summary reports of all scientific dating procedures or other analyses carried out
- A summary of the contents of the project archive and its location
- Appendices and figures as appropriate
- References and bibliography for all sources used

6.3 Post-excavation analysis report preparation will conform to the standards set out by MAP2, Phase 4 (appendices 6 and 7).

6.4 Following completion of the archaeological works, a copy of the report on the findings will be submitted to the County Archaeologist. A copy of the report will also be submitted to the appropriate Sites and Monuments Record as a public document.

7.0 METHODS STATEMENT

Stratigraphic record

7.1 Further analysis will be carried out on the dating of the artefactual record in order to provide a more comprehensive understanding of the site chronology. This should be integrated with a detailed analysis of the stratigraphic and spatial interrelationships of the features and deposits which comprise the site record. A definitive series of phase plans should also be drawn up to illustrate the main periods of activity and stratigraphic relationships phase by phase. Radiocarbon dating of 11 features will be undertaken to further inform this process.

Pottery

7.2 The pre-Roman Iron Age elements of the assemblages from Pig Hill and Harehill Moor have the potential to contribute usefully to the further understanding of the sites

and their regional context. This material will be examined and analysed leading to records of:

- The detail of pre-Roman Iron Age pottery fabrics identified, with quantification tabulated by context, together with relative proportions of each fabric (by weight to nearest 5g).
- A brief review of the pottery in the regional context.
- Note of any contribution from the ceramic assemblage to the interpretation of site status and function.

7.3 The medieval pottery is of less value because of the small amount present and the absence of detailed structural information to support chronological analysis: it is suggested that the medieval pottery collected during monitoring be examined and reported upon to detail:

- The range and approximate proportions of pottery present

Flint

7.4 A portion of the collected flints will be illustrated. They comprise 3 scrapers, (records 5, 11, 13, contexts 700, 721, 756) 74, 266: squares 31, 78 context 200) a tool trimming (record 8, context 707), a polished flake (record 14, context 773) and a flaked flake (record 18, context 1087).

Metal working debris

7.5 Further detailed analysis of the distribution of metal working debris recovered from Pig Hill is required with the aim to refine the evidence of concentrations of smithing activities within the site. This kind of evidence is extremely rare in the north-east of England north of the River Tees and comparison of the evidence with other sites will greatly add to an understanding of the metalworking during the Iron Age in the region.

Stone

7.6 No further analysis is required on the fragments of worked stone.

Metal finds

7.7 Although some useful information was gained from the initial analysis of these objects, no further analysis is recommended. The copper-alloy strap end recovered from Pig Hill will be conserved and retained.

Environmental

7.8 Further study of the environmental material from the samples will be restricted to the charred plant and charcoal remains. Detailed analysis and identification of the small numbers of grain and particularly chaff in the majority of the samples will be carried out to identify both the types and relative importance of the cereal crops grown and harvested and the types of crops being processed at the site. A selection of the richer charcoal samples will be studied to assess the fuels being used at the site and to try and account for the differences between some samples that are predominantly wood charcoal while others include abundant twigs. The identification of the latter as possible heather will be tested and the presence of other twiggy species that could

account for this material. All samples selected for radiocarbon dating will be identified and the most suitable material selected for dating.

Documentary analysis

- 7.9 Archival, documentary and cartographic research of all available sources related to similar sites of Iron Age date within the region and beyond will be undertaken. This will aid the overall interpretation of the excavations at Pig Hill and Harehill Moor and place both sites within their chronological, cultural and socio-economic landscape at both regional and national levels.

8.0 STAFF

- 8.1 Richard Fraser will be the Partner of the firm in overall management of the project. He graduated from the University of Newcastle upon Tyne with a BA (Hons) in Archaeology and Ancient History. Between 1982 and 1990, he gained eight years excavation and planning experience as a field officer for Tyne and Wear County Council and then Assistant City Archaeologist with Newcastle City Council. He has considerable experience of preparing archaeological assessments in connection with planning applications and as part of the Cultural Heritage components of Environmental Statements. He is also responsible for the project management of a wide variety of archaeological schemes including excavation, building surveys, topographic surveys and estate surveys.
- 8.2 The management of the analysis project will be the responsibility of Paul G Johnson who is an acting Project Manager within the firm. He graduated with a BA (Hons) in Archaeology from the University of Durham 1990 and was elected a Fellow of the Society for the Antiquities of Scotland in 1993. He has seventeen years of archaeological experience and has managed and directed a wide range of archaeological projects and excavations throughout the UK. He joined NAA in April 2003 having previously worked for the University of Glasgow and Tees Archaeology. His principal duties include undertaking desk-based assessments, managing fieldwork projects and undertaking landscape survey and building recording.
- 8.3 Gavin Robinson will be the Project Supervisor responsible for the writing of the analysis report. He graduated with a BSc (Hons) from the University of Durham in 1997 and obtained a MA in prehistoric archaeology from the University of Durham in 2001. He has ten years of archaeological experience and supervised a wide range of archaeological projects throughout the UK. The Finds Supervisor will be Sarah Wilkinson who graduated from the University of Durham in 1996 with a BA (Hons) in Archaeology. She has ten years archaeological experience and has worked as a permanent finds supervisor for NAA since 1998, including on a number of sites within the County Durham area.

REFERENCES

English Heritage (1997) *Research Agenda* Draft report

Haselgrove, C *et al.* (2001) *Understanding the British Iron Age: An Agenda For Action* Salisbury: Trust for Wessex archaeology

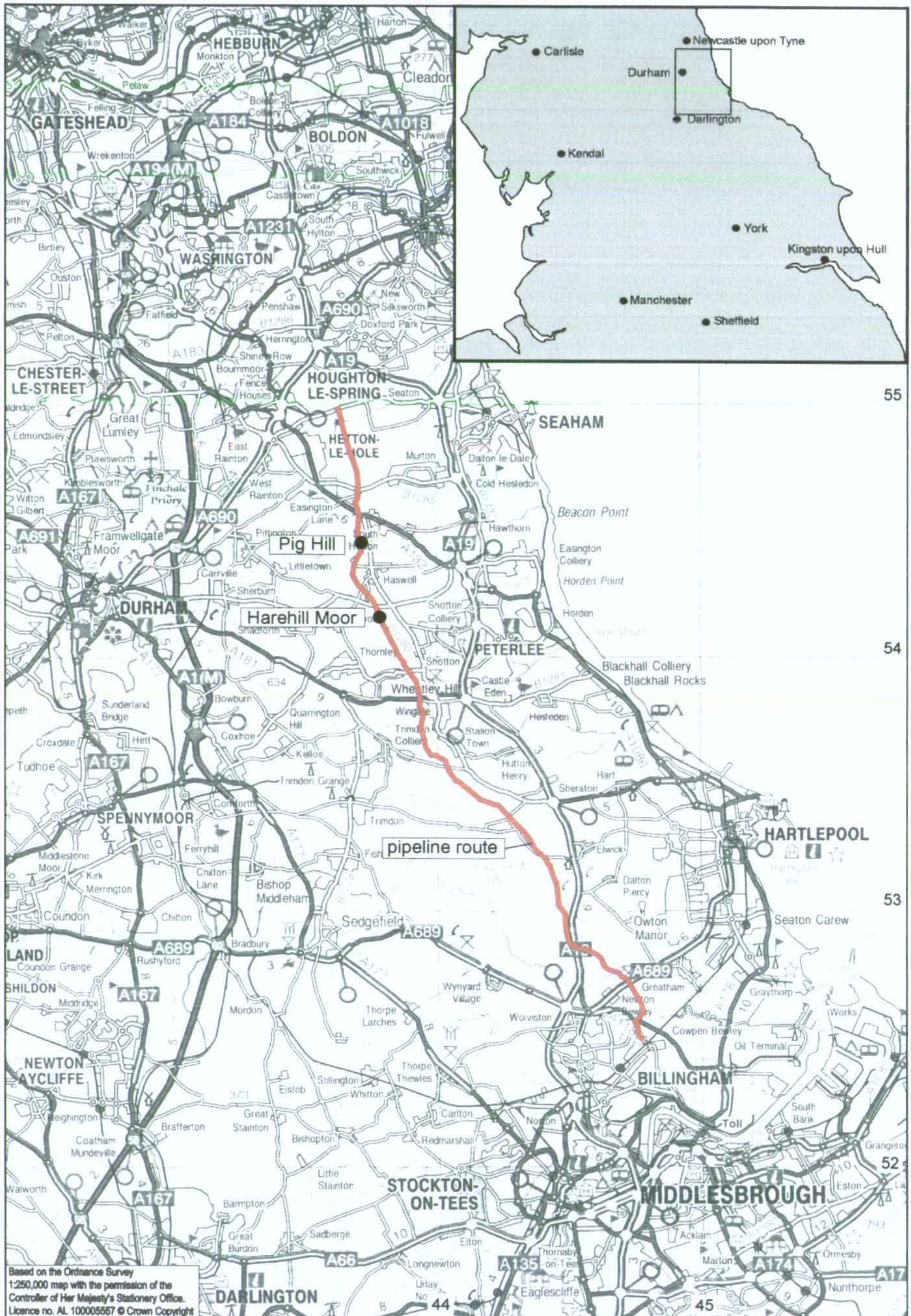
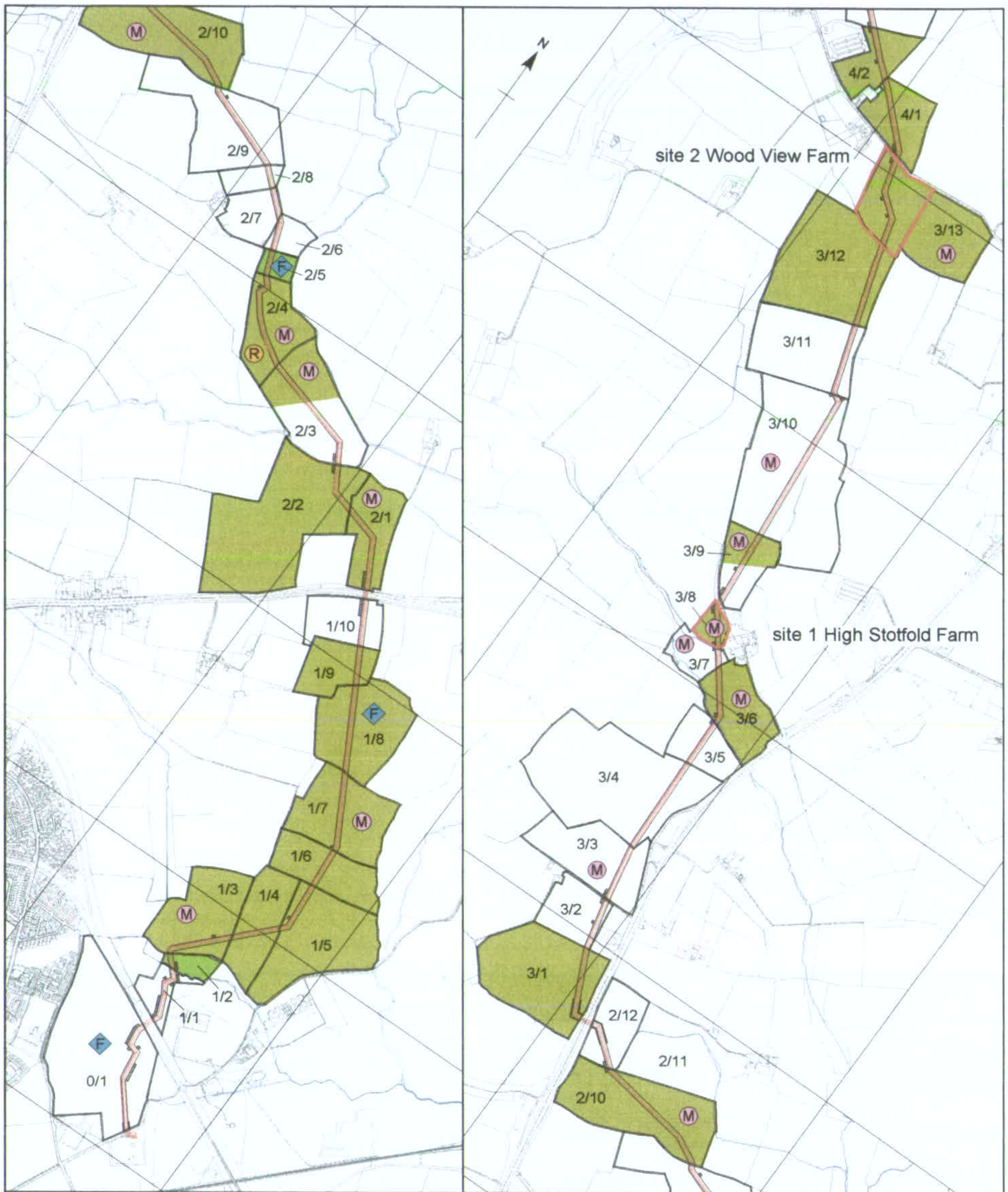


Figure 1 Cowpen Bewley to Warden Law gas pipeline: location of pipeline route and archaeological excavations



Key

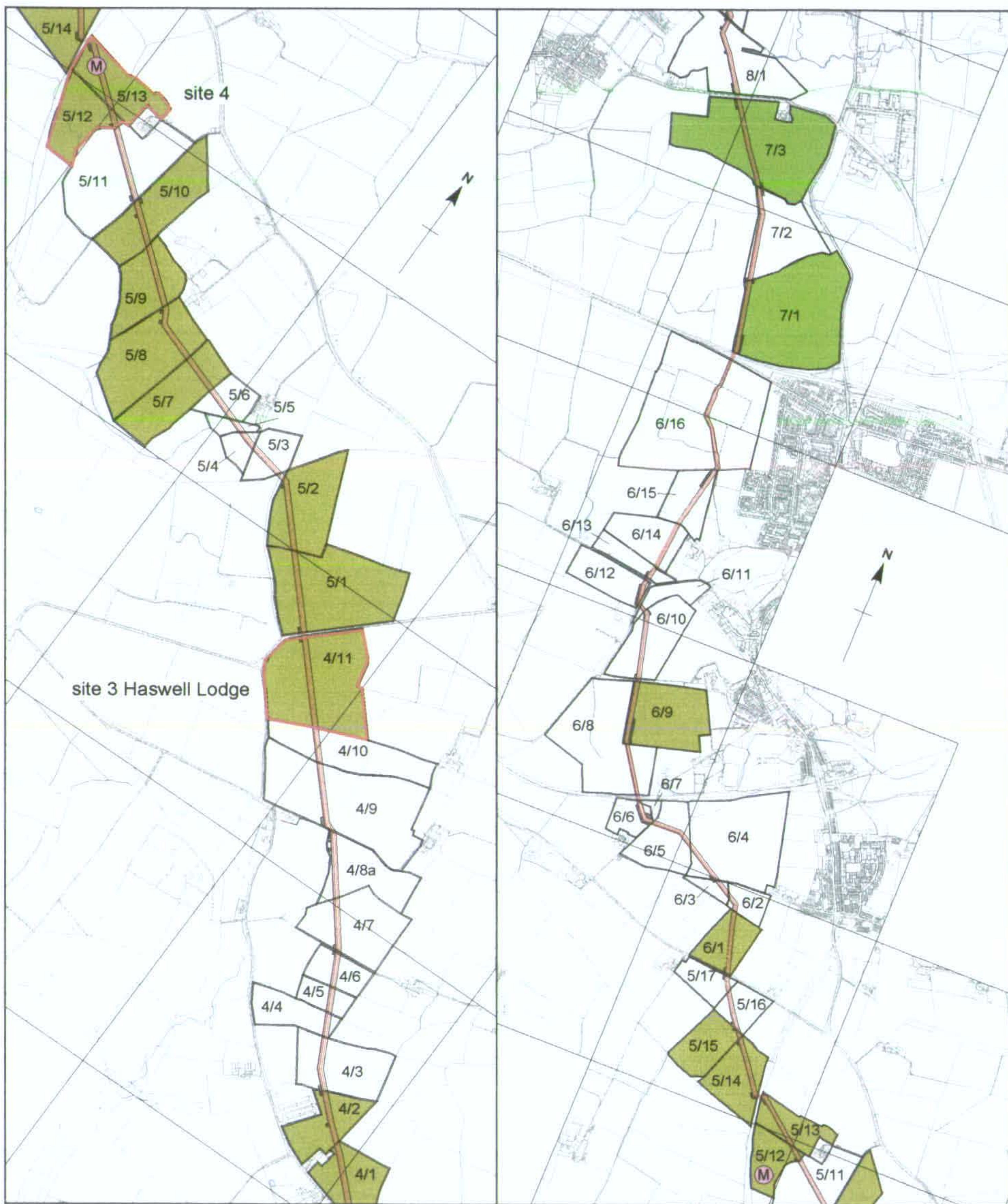
- Flint
- Roman pottery
- Medieval pottery
- Archaeological site
- Ridge and furrow
- Ridge and furrow (aerial photography)
- Ridge and furrow (excavated)

0 1 km

scale 1:20,000 @ A4

Based on Ordnance Survey digital data supplied by Transco
 Reproduced with the permission of the Controller of Her Majesty's Stationery Office.
 Licence no. AL 100005557 © Crown Copyright

Figure 2a Cowpen Bewley to Warden Law gas pipeline: monitoring results along pipeline route



Key

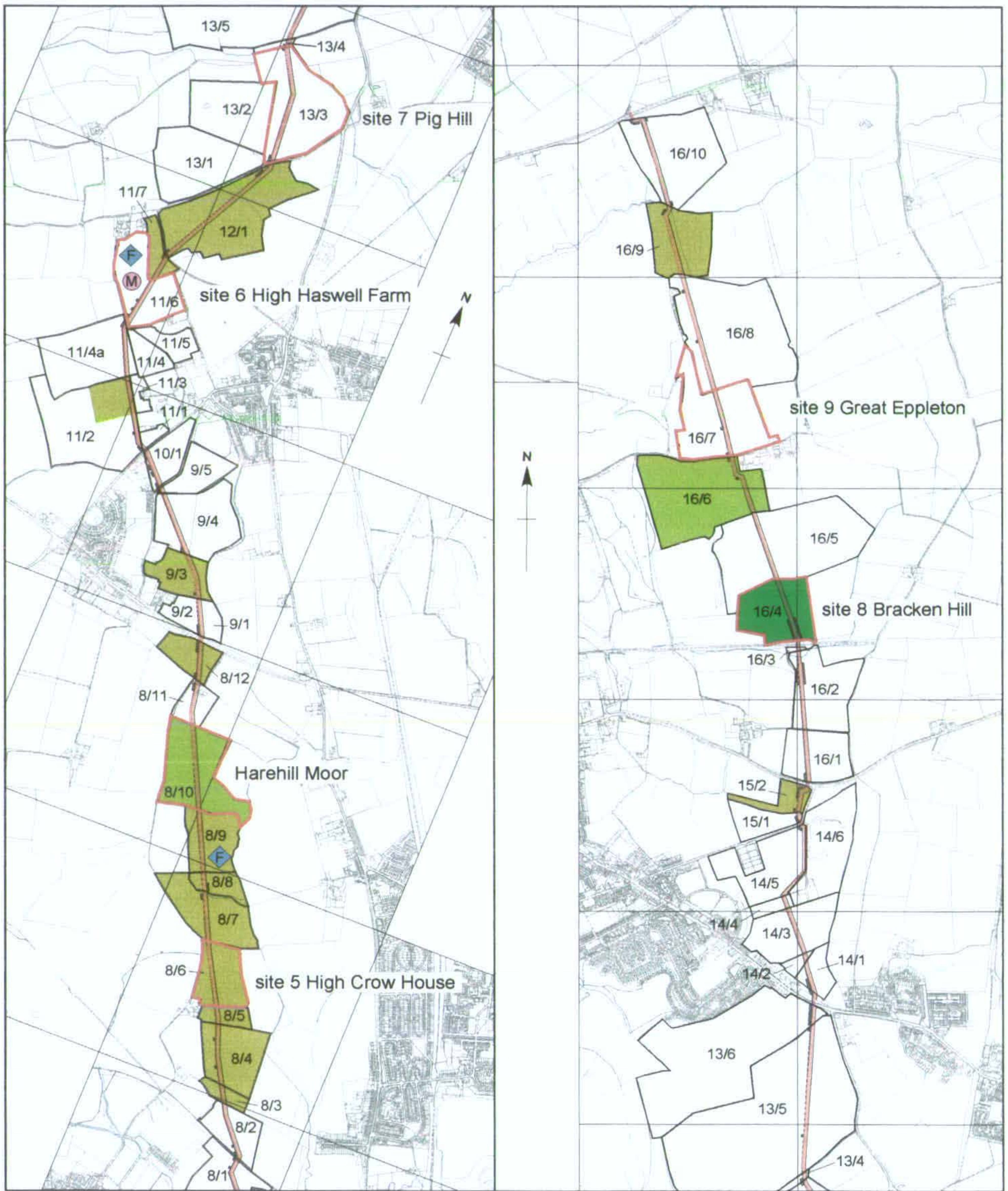
- ◆ Flint
- Ⓡ Roman pottery
- Ⓜ Medieval pottery
- Archaeological site
- Ridge and furrow
- Ridge and furrow (aerial photography)
- Ridge and furrow (excavated)

0 1 km

scale 1:20,000 @ A4

Based on Ordnance Survey digital data supplied by Transco
 Reproduced with the permission of the Controller of Her Majesty's Stationery Office.
 Licence no. AL 100005557 © Crown Copyright

Figure 2b Cowpen Bewley to Warden Law gas pipeline: monitoring results along pipeline route



Key

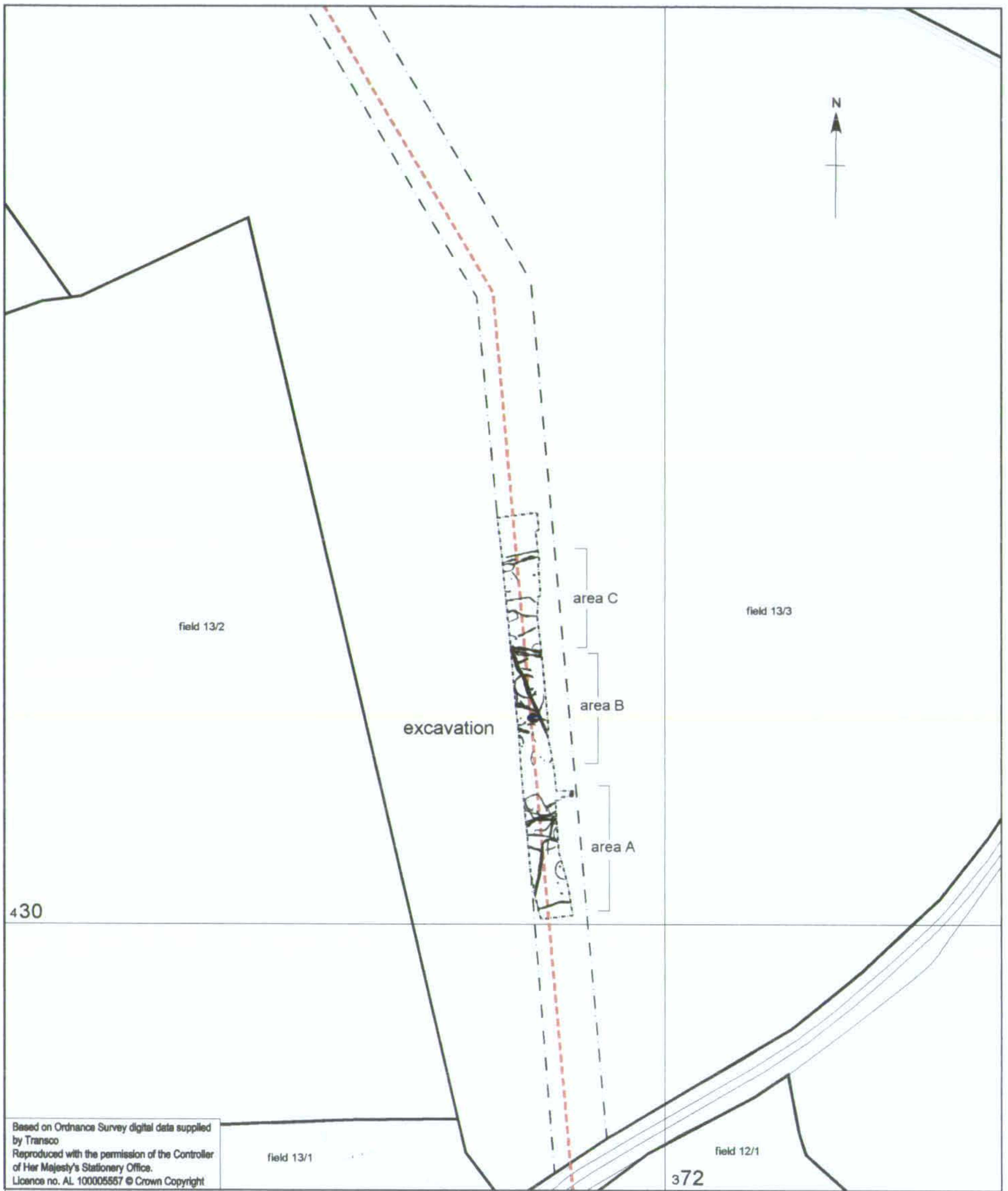
- ◆ Flint
- Ⓡ Roman pottery
- Ⓜ Medieval pottery
- Archaeological site
- Ridge and furrow
- Ridge and furrow (aerial photography)
- Ridge and furrow (excavated)

0 1 km

scale 1:20,000 @ A4

Based on Ordnance Survey digital data supplied by Transco
 Reproduced with the permission of the Controller of Her Majesty's Stationery Office.
 Licence no. AL 100005557 © Crown Copyright

Figure 2c Cowpen Bewley to Warden Law gas pipeline: monitoring results along pipeline route



Based on Ordnance Survey digital data supplied by Transco
 Reproduced with the permission of the Controller of Her Majesty's Stationery Office.
 Licence no. AL 100005557 © Crown Copyright

- Key**
- - - - - pipeline route
 - - - - - pipeline corridor
 - field boundary

0 100 m

scale 1:2000 @ A4

©NAA 2004

Figure 3 Cowpen Bewley to Warden Law gas pipeline: Pig Hill, location of excavated features

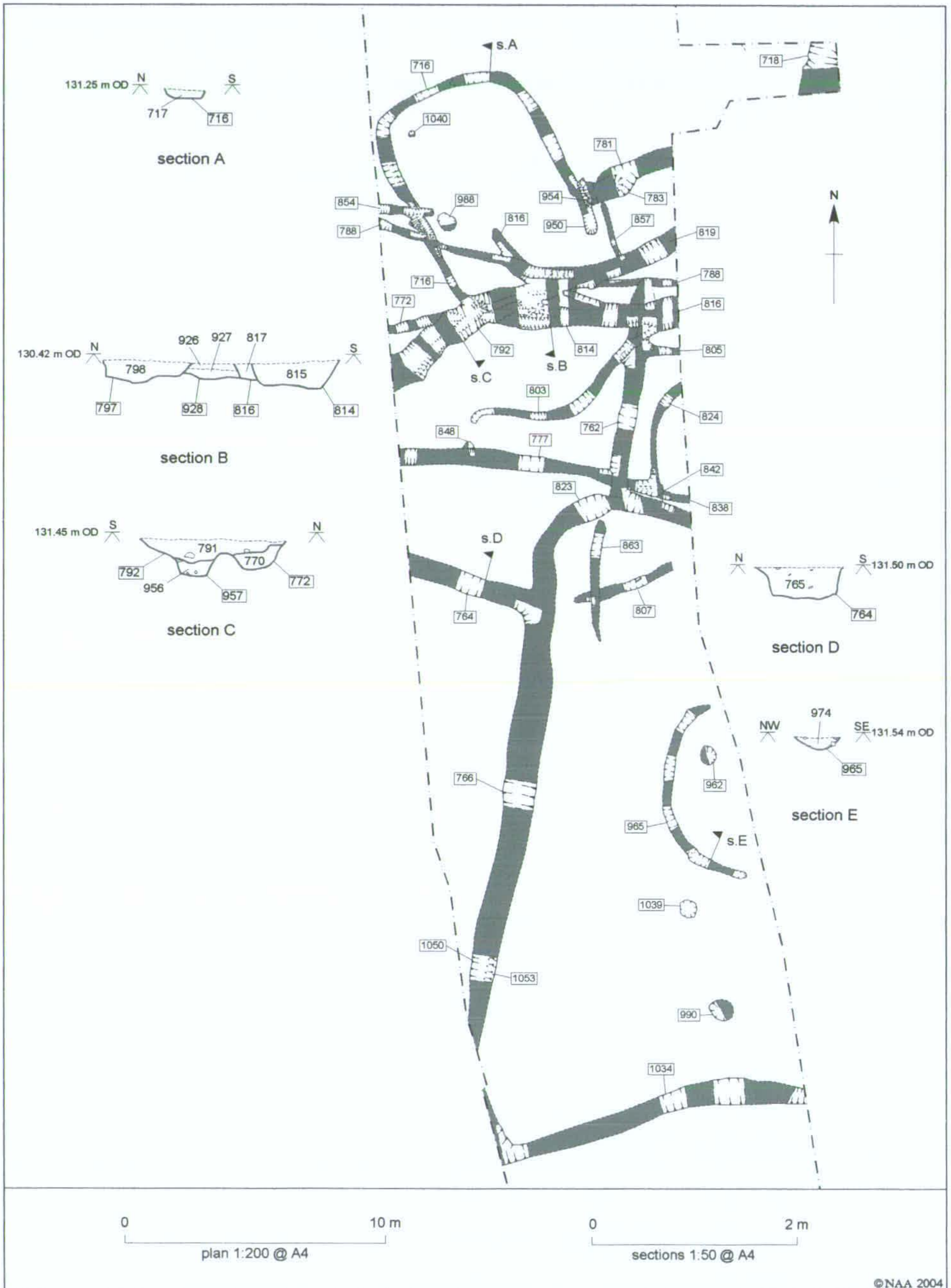


Figure 4a Cowpen Bewley to Warden Law pipeline: Pig Hill area A, plan and sections

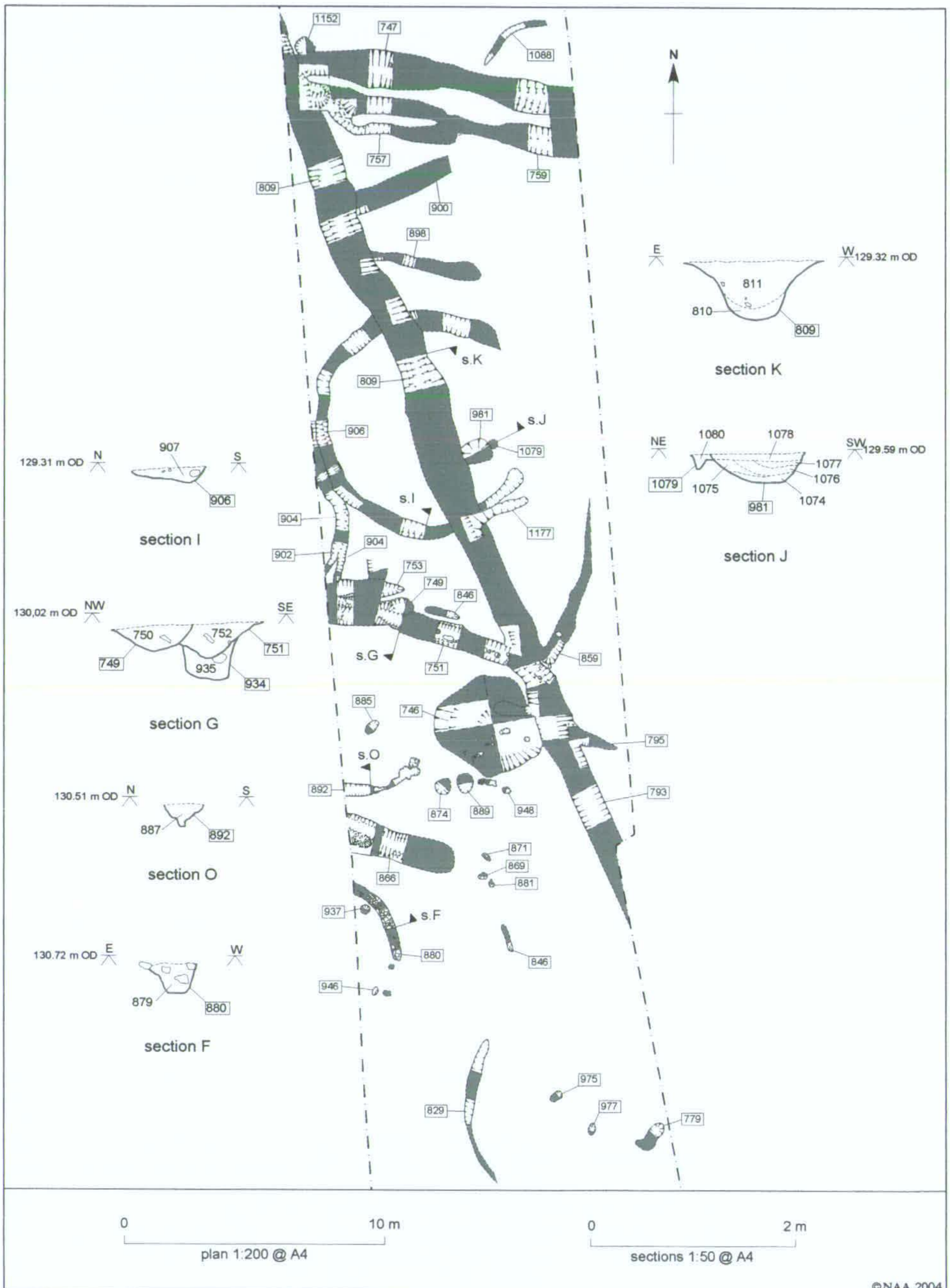


Figure 4b Cowpen Bewley to Warden Law pipeline: Pig Hill area B, plan and sections

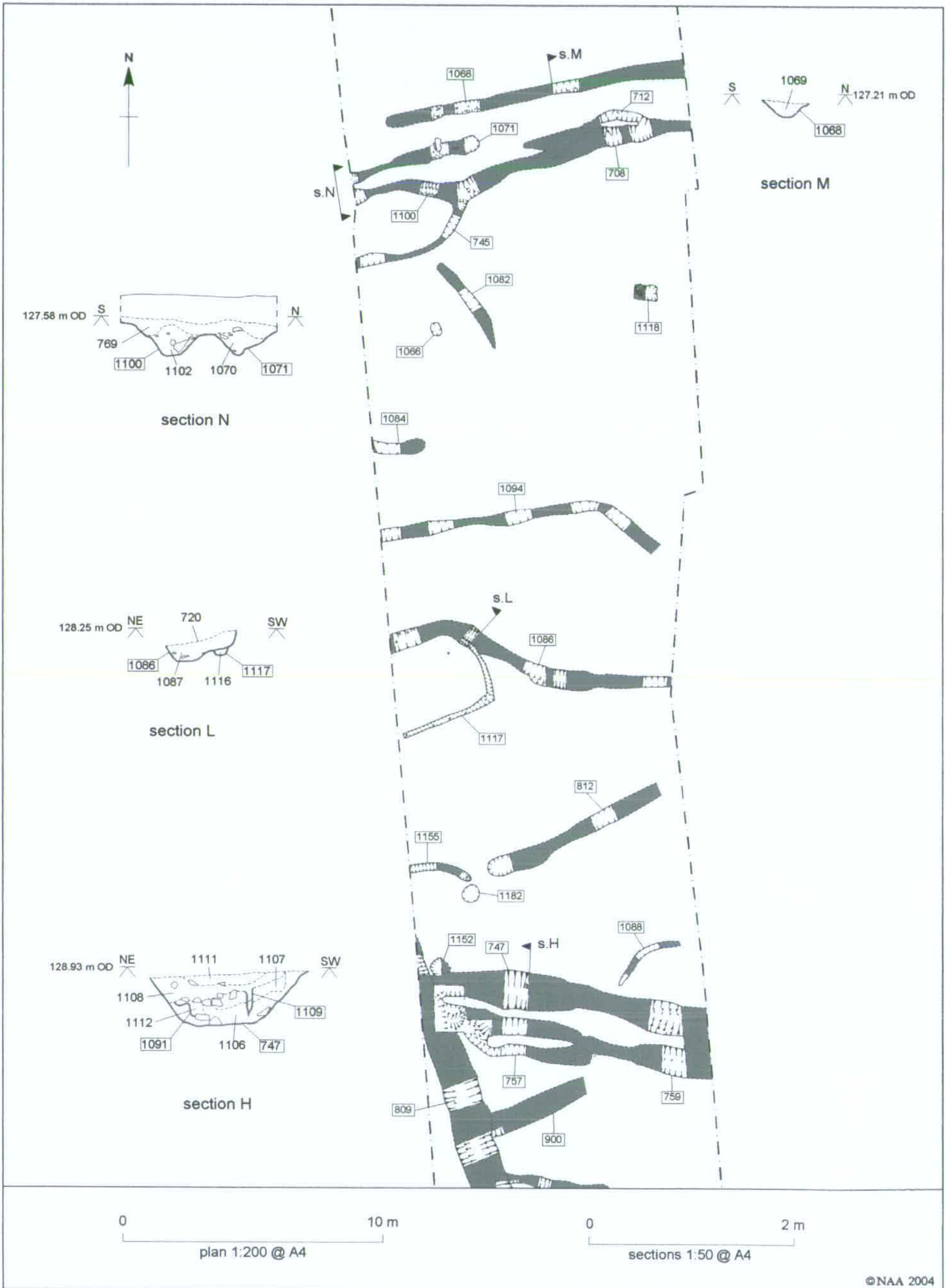


Figure 4c Cowpen Bewley to Warden Law pipeline: Pig Hill area C, plan and sections

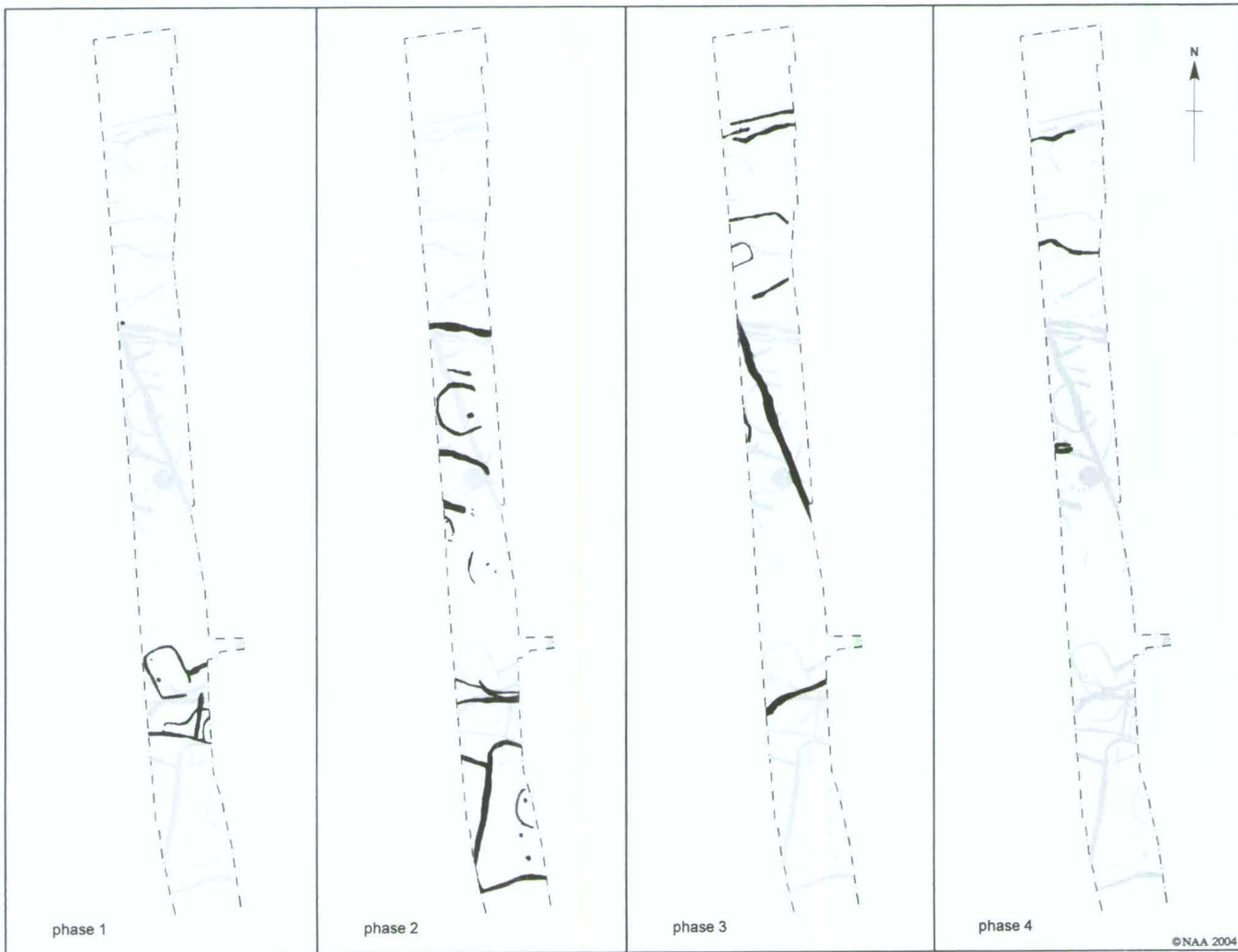
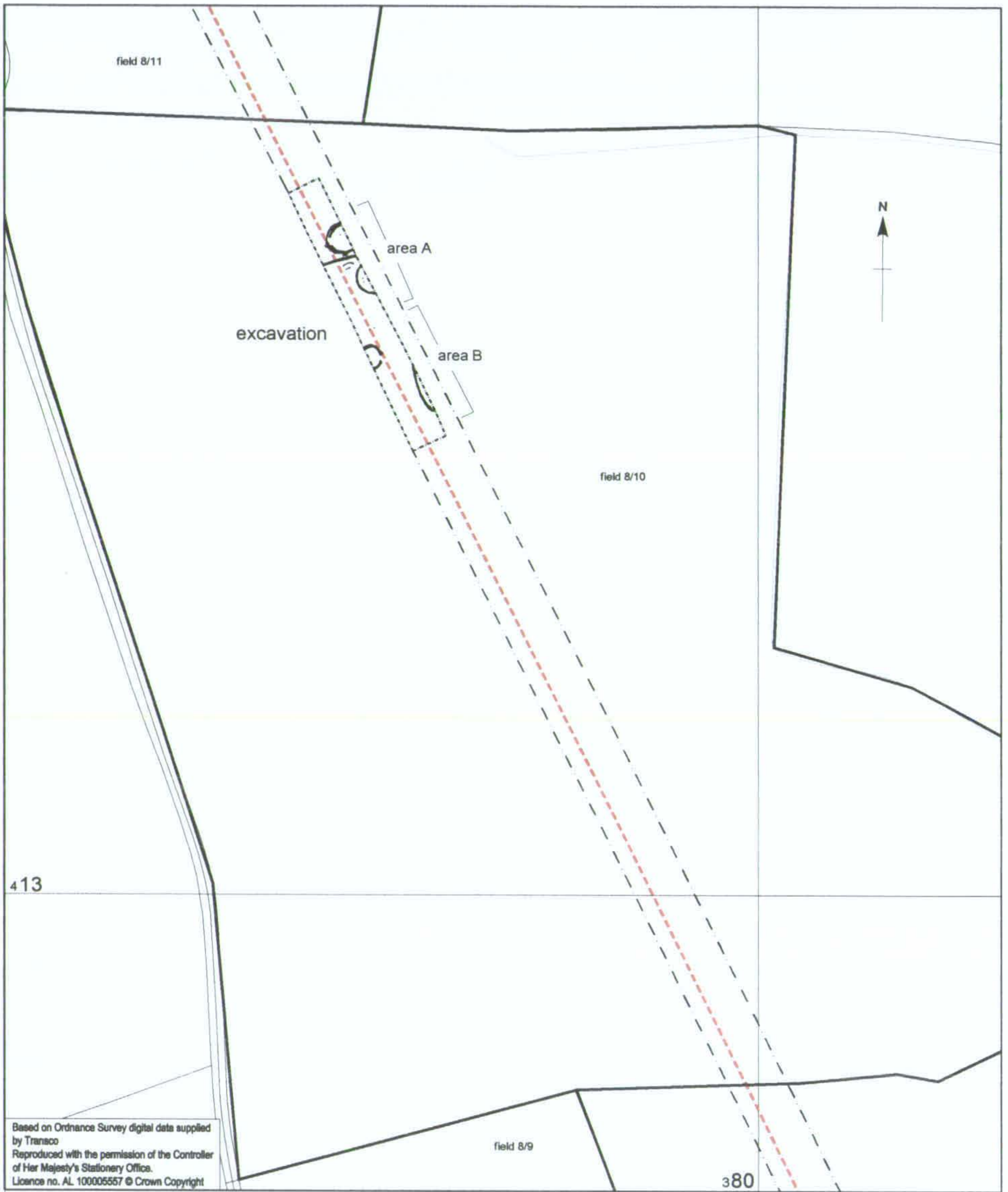


Figure 5 Cowpen Bewley to Warden Law gas pipeline: Pig Hill, phased plan of features



Based on Ordnance Survey digital data supplied by Transco
 Reproduced with the permission of the Controller of Her Majesty's Stationery Office.
 Licence no. AL 100005557 © Crown Copyright

Key

- - - pipeline route
- · - · - pipeline corridor
- field boundary
- ▬ trial trench

0 100 m
 scale 1:2000 @ A4

©NAA 2004

Figure 6 Cowpen Bewley to Warden Law gas pipeline: Harehill Moor, location of archaeological excavation

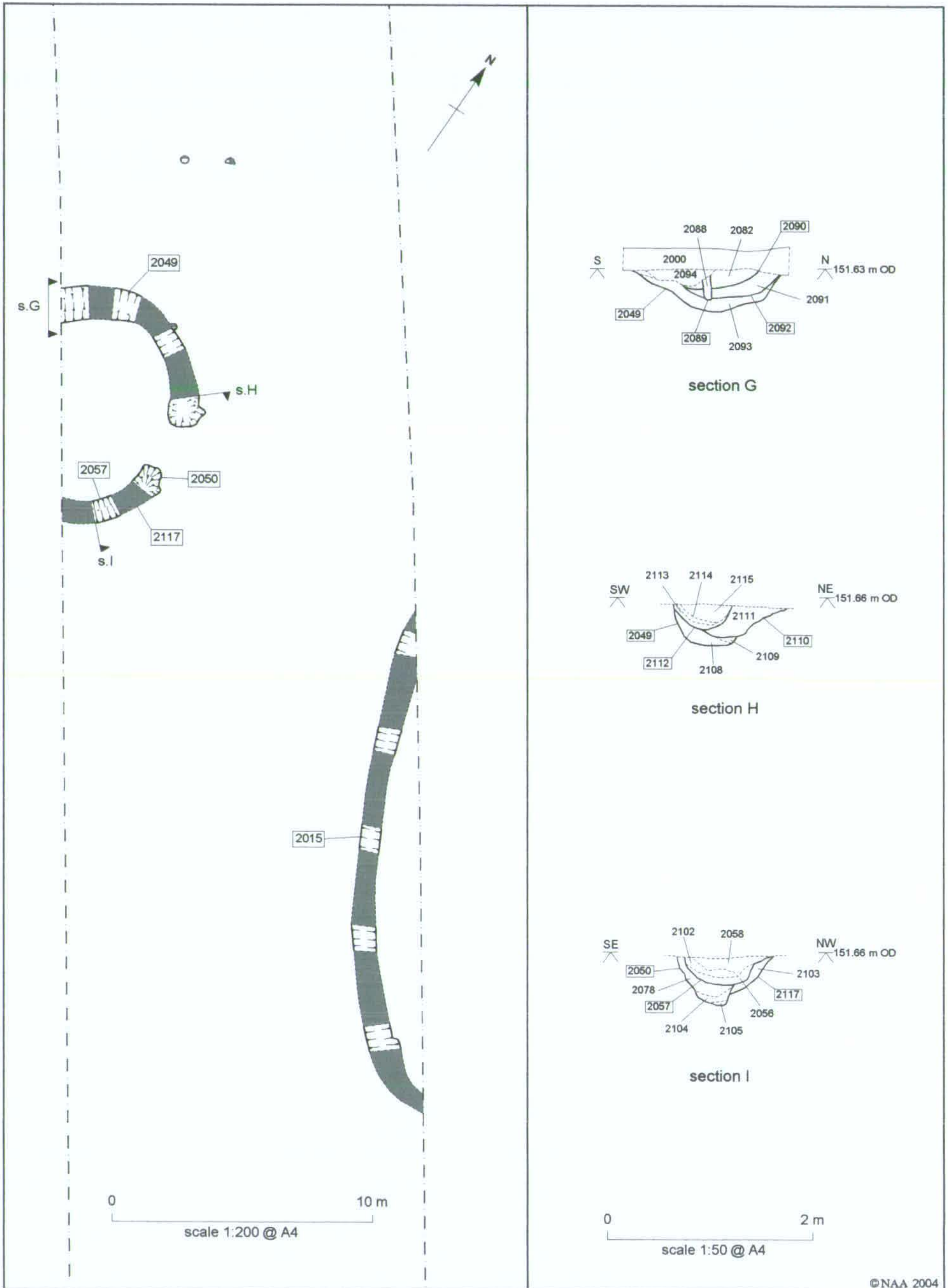


Figure 7b Cowpen Bewley to Warden Law pipeline: Harehill Moor, area B plan and sections



*Plate 1 Cowpen Bewley to Warden Law pipeline:
Pig Hill, archaeological supervision of machine excavation.*



*Plate 2 Cowpen Bewley to Warden Law pipeline:
Pig Hill, excavation of archaeological features by hand.*



*Plate 3 Cowpen Bewley to Warden Law pipeline:
Pig Hill, possible sub-rectangular building (716).*



*Plate 4 Cowpen Bewley to Warden Law pipeline:
Pig Hill, complex of inter-cut features on the crest of the ridge.*



*Plate 5 Cowpen Bewley to Warden Law pipeline:
Pig Hill, ditch 793 facing south-east towards the crest of the ridge.*



*Plate 6 Cowpen Bewley to Warden Law pipeline:
Harehill Moor, roundhouse gullies (2004 and 2006) at the northern extremity of the site.*



*Plate 7 Cowpen Bewley to Warden Law pipeline:
Harehill Moor, general shot of the roundhouse at the northern extremity of the site.*



*Plate 8 Cowpen Bewley to Warden Law pipeline:
Harehill Moor, roundhouse gully (2012).*



*Plate 9 Cowpen Bewley to Warden Law pipeline:
Harehill Moor, roundhouse at the southern extremity of the site.*